

# MUNICIPAL MJOURNAL

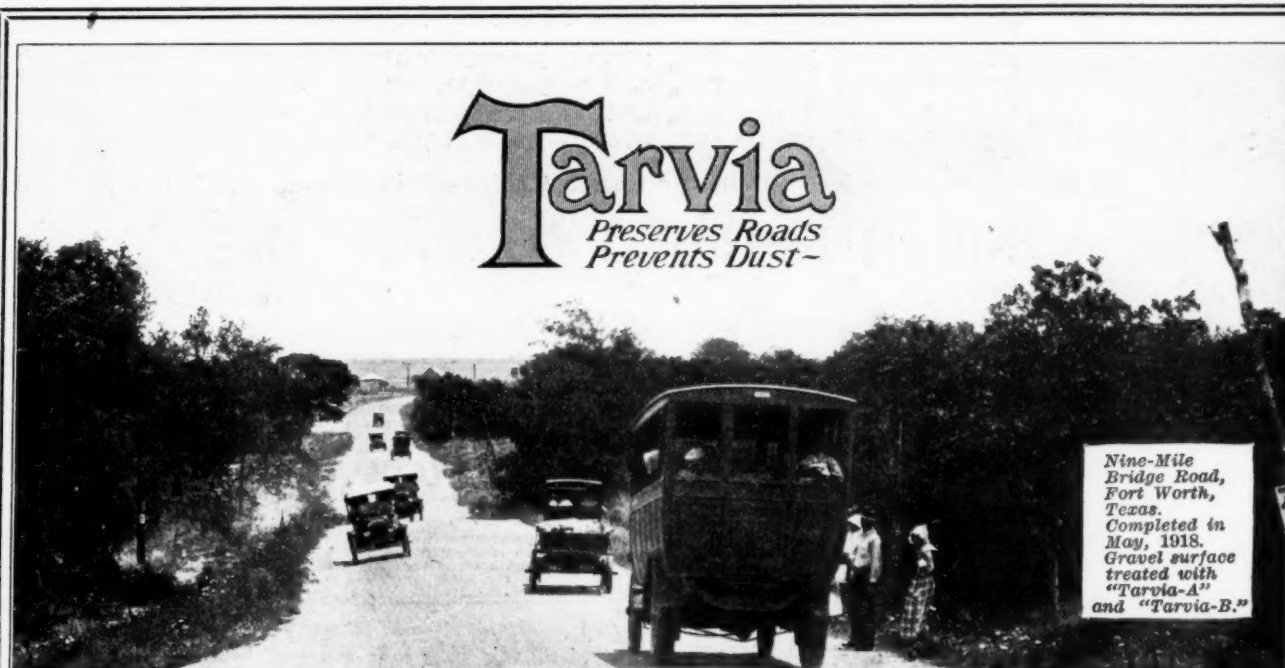
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WEEKLY

VOLUME XLVI  
No. 3

January 18, 1919

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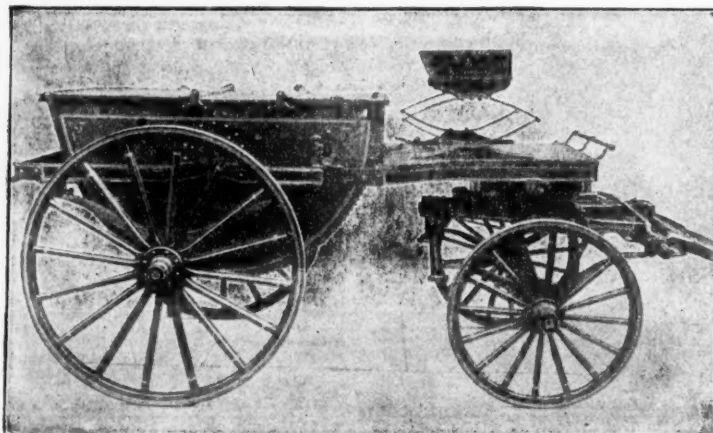
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# Municipal Journal

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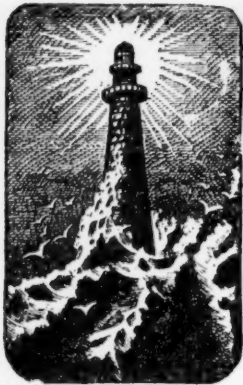
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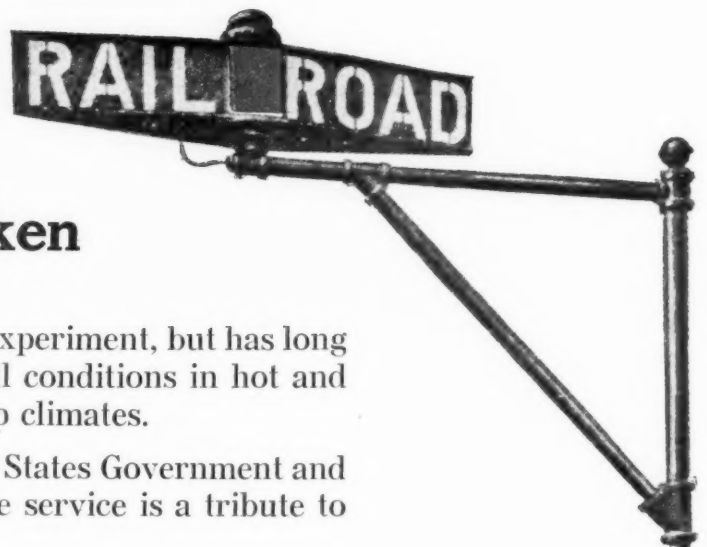
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# Municipal Journal

Volume XLVI

NEW YORK, JANUARY 18, 1919

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## STREET CLEANING REPORT FOR ROCHESTER

### Recommendations for Organization of Force, Municipalization of Collection Service and Purchase and Use of Equipment—Data Concerning Work Done by Street Cleaning Force—Stables and Shops.

There has just been made public a report prepared last year by the Bureau of Municipal Research of Rochester, N. Y., which report gives the result of a study, undertaken at the request of the commissioner of public works, made by John T. Child, assistant engineer, working under the supervision of James W. Routh, chief engineer of the bureau. The aim of the report is the betterment of the street cleaning service in Rochester, and the study necessarily involved a thorough investigation of existing conditions. The report sets forth in considerable detail the conditions as ascertained, and also the recommendations of the bureau as to both the organization and control of the force and the methods and equipment to be employed. The report occupies 133 pages of text, and contains 38 tables, 26 photographs and 12 maps, diagrams and charts.

While many of the features and practices described in the report can be found duplicated in many other cities, the report will probably be most interesting and instructive to officials of other cities because of the measures and methods that are recommended rather than those that now exist. Consequently, in the following abstract of the report special consideration will be given to the recommendations, existing conditions being described chiefly where they serve to illustrate the recommendations or where they appear to be somewhat out of the ordinary.

#### ORGANIZATION OF FORCE.

In the "General Summary" which serves as an introduction to the report, there is presented first a consideration of the financial side of the problem, followed by one of the organization and distribution of the force. Concerning the latter, the engineers recommended as follows:

"The sanitary services should be reorganized and com-

bined in a single organization unit to be known as the Bureau of Sanitation. This bureau should be headed by a general superintendent, responsible for all of the various sanitary services, including the operation of the garbage reduction plant and refuse incinerator, the disposal of ashes, the collection of garbage, rubbish and ashes, and street cleaning and snow removal. This coordination of functions would result in a bureau consisting of three divisions: a Division of Disposal Plants, a Division of Street Cleaning and Refuse Collection, and a Division of Stables and Shops.

"After a careful study of the various factors involved, it is believed that the most effective plan of organization for the proposed Division of Street Cleaning and Refuse Collection would be a combination of the functional and geographical plan of organization. The city would be divided geographically into five districts, and the work within each district would be supervised by functional officers reporting to the district superintendent. This plan of organization could be brought into effect without increasing the existing overhead expense of the services rendered.

"Any plan for reorganizing and improving the sanitary services must be based upon permanent employment for all officers and men engaged in this work. The sanitary services require, and actually have employed during the last two years, a minimum force consisting of 68 officers, 550 laborers and 130 teams. When permanent employment is accomplished, the force should be uniformed, from general superintendent to laborer; the officers should be provided with badges indicative of their position and responsibility and given authority to issue warnings and summonses for violation of the ordinances relating to the work; there should be provided a code of discipline whereby the men may be rewarded, or penalized for breaches of discipline; there should be a standardization of salaries, automatic increases in salary, dependent upon length and character of service, and an adequate pension system and medical care. In addition to this, provision should be made for the development of standard work methods, and the instruction of the entire force, including both officers and men, in

Street Dirt Census  
(July 2-14, 1917, Inclusive)

District	Number of sweepers	Number of routes	Av. No. of tubs per day	Average No. cu. yds. dirt collected daily	Daily number tubs per man	Daily cu. yds. per man	Daily cu. yds. per route	Minimum and maximum tubs per man
I-E .....	24	22	121	19.4	5.05	.806	.88	3 -10
I-W .....	23	19	147	23.5	6.4	1.02	1.24	2 -12
II .....	27	24	209	33.4	7.75	1.24	1.35	2 - 9
III .....	30	28	270	43.2	9.0	1.44	1.54	2 -22.5
IV .....	37	37	162	25.9	4.4	.70	.70	2.5-10
V .....	38	30	193	30.4	5.08	.813	1.03	2 -13
VI .....	23	23	129	20.6	5.6	.896	.896	3 -10
VII .....	23	16	158.5	25.3	6.9	1.1	1.58	2 -12
VIII .....	47	47	813	130.0	17.3	2.77	2.77	4 -36
IX .....	24	20	117.6	18.8	4.9	0.784	.933	2 -11
Total ....	296	266	2,320	370.5				
Average ...	29.6	26.6	232	37.05	7.24	1.16	1.30	

NOTE—Dirt is collected in .16 cubic yard tubs and .72 cubic yard carts. One cart equals 4.5 tubs. Carts are dumped by sweepers and not picked up. All cart collections are reduced to tubs in above table.

RAINFALL—July 2-14, 1917—2.19 inches fell in 6 days.

these work methods. Knowledge of, and proficiency in, these methods should be made a prerequisite for employment on the permanent force.

"It is believed that municipal ownership of teams and the operation of a Division of Stables in the Bureau of Sanitation would prove no more expensive than the present system of hiring teams by the day; that it soon would prove more economical, and that better service undoubtedly would result. Therefore, it is recommended that steps be taken toward the purchase of sufficient teams to carry on the work of street cleaning and refuse collection, and that a Division of Stables and Shops be provided in the reorganized Bureau of Sanitation, one of whose functions would be the operation of the stables. The ownership of municipal stables would increase the number of men on the permanent force by about 130.

"The second function of the Division of Stables and Shops would be the operation of the repair shop. The existing repair shop should be, and soon must be, enlarged to meet the demands of the service. It is suggested that additional buildings be constructed to provide greater floor space, and that an adequate working force and sufficient machinery of various kinds be provided to handle the work."

As an indication of the detail with which the investigation was conducted, a record was kept during two weeks in July of the work done by the sweepers in each of the ten districts into which the city is divided. The records obtained are summarized in the table given herewith. Districts 1E and 1W are those portions of the business district lying on the east and west sides of the Genesee river, conditions in which are such as to make the cleaning in them more difficult than in the other districts.

The proposed force would consist of a general superintendent, an assistant general superintendent, 5 district superintendents, 5 district clerks, 3 inspectors, 22 foremen of ash and rubbish collection, one foreman of street cleaning and collection, 15 section foremen of street cleaning, 10 dump foremen, and 5 assistant superintendents in charge of garbage collection.

The assistant general superintendent would be respon-

sible for street cleaning work done at night; in this connection it is interesting to note those paragraphs of the report referring to night work: "The nature of street cleaning is such that it requires almost continuous attention to keep things on the move, so that dirt or snow does not get ahead of the cleaning forces. Street cleaning at night becomes more important with the growth of a city, chiefly because the heavy traffic makes it impossible to do certain kinds of cleaning to the best advantage by day. . . .

"Night snow work is bound to be more effective and cheaper than snow removal by day, because traffic is then light and so will not hamper the men or compact the snow before it can be removed. . . .

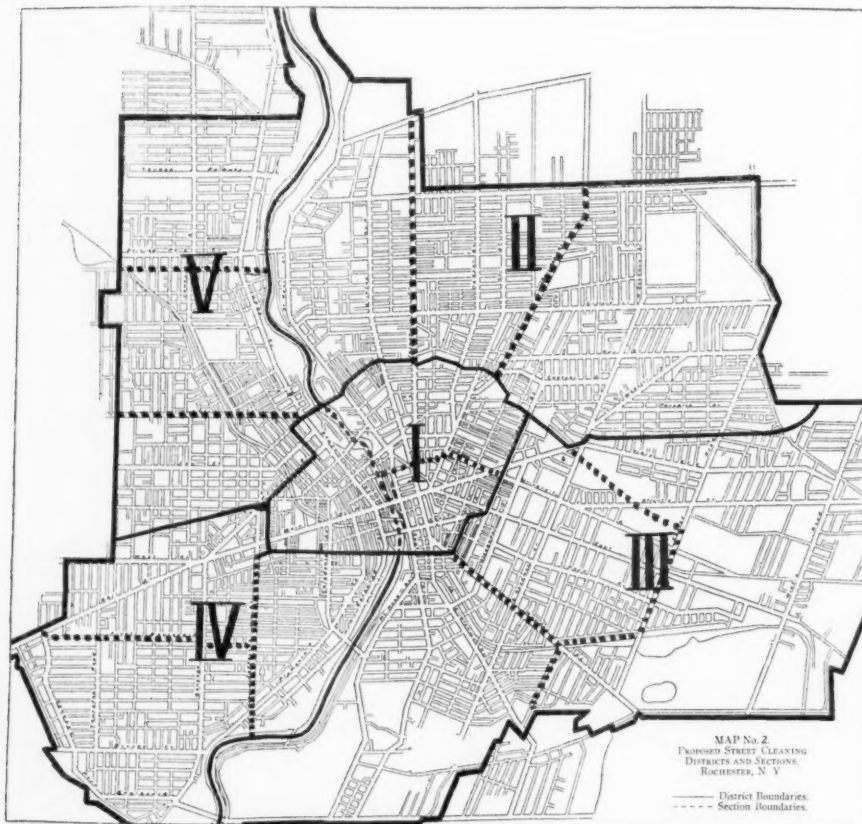
"In summer, night street cleaning is more extensive if not more important than in winter and can be planned for ahead of time. Several necessary phases of street cleaning can be carried on to better advantage at night than in the daytime. These include both motor and hose flushing, sidewalk cleaning and litter patrol work. Machine sweeping would be well worth while on some of the Medina block pavements down-town, but it can be done satisfactorily only at night, when the car service is at a minimum and when there are few standing vehicles. Provisions should be made to carry on this kind of work at night in addition to that already attempted.

"Any adequate plans for street cleaning will make it necessary for the department to do night work extensively as a regular thing. It should be possible for one night superintendent in an automobile to supervise the work in summer without the assistance of foremen. Hand and machine flushing is done by two-men or three-men gangs which do not require foremen, but all branches of street cleaning need real supervision.

"It is plain that the position of night superintendent would be an important one, requiring intimate knowledge of every kind of work and involving considerable responsibility. . . . He should be in direct charge of all night work, consisting of hose flushing, machine flushing, wagon flushing, snow work, litter patrol and sidewalk sweeping (in the down-town district), and such machine sweeping as is done at night on heavy traffic streets."

Concerning laborers, the engineers recommend that so far as possible all of the employees be made permanent, emergency labor being added only where absolutely necessary. "Emergency laborers are not only unacquainted with local conditions and methods, but they are unreliable. One day they are on the job and the next day gone. Many men who, of necessity, are put to work when occasion demands, are 'floaters' who work for a meal or drink and then quit. They frequently are insufficiently clad and poorly fed and usually are lazy, if not otherwise inefficient, and have to be under close supervision if any work is to be accomplished. Emergency labor can be reduced to a minimum only by the permanent employment and proper training of as many laborers as are necessary for year-round service."

In studying the question of size of force, it was found that during the winter months the number of laborers



PROPOSED DIVISION OF ROCHESTER INTO DISTRICTS AND SECTIONS FOR STREET CLEANING PURPOSES.



employed for collecting ashes, garbage, etc., exceeded that needed for street cleaning most of the time; but as spring approached the collection force decreased, becoming less than the cleaning force in April and remaining considerably less until November. It was therefore proposed as a tentative provision that 200 men be employed permanently for street cleaning, 200 for refuse collection, and 150 as interchangeable between the two. This number would be increased, should city own all its team and stable them, by 96 drivers, 15 stable men and 15 hostlers.

It was recommended that a medical examining officer be provided for the Department of Public Works, which, although employing nearly 2,500 men, had no surgeon on its staff, but employed medical aid for accident cases which come under the labor compensation law.

#### STABLES AND SHOP.

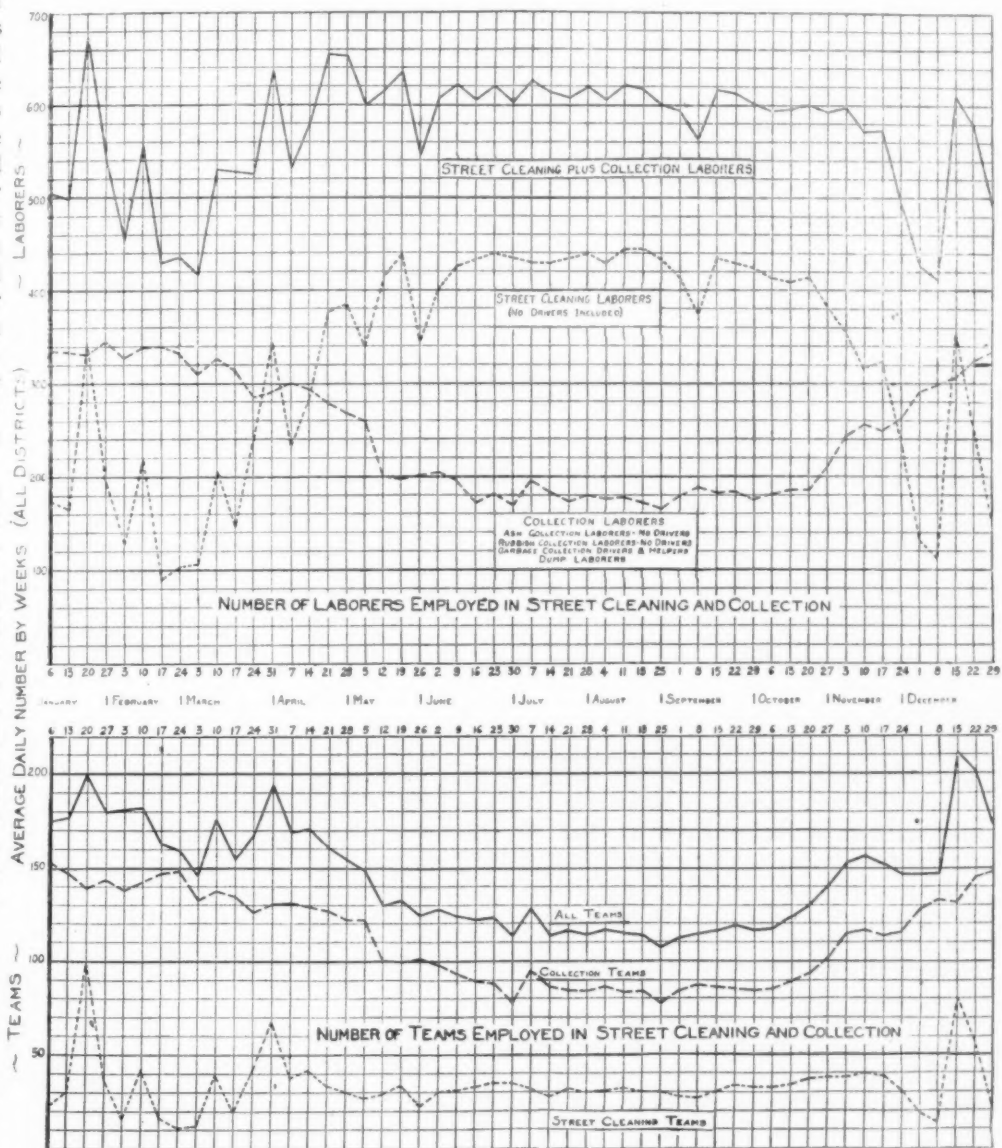
On January 1, 1917, the city purchased the stable and equipment of the Genesee Reduction Company. The equipment included 65 horses and mules and 38 wagons for use in collecting garbage. The teams were stabled in a wooden barn on the west bank of the Genesee river adjacent to the reduction plant. In the barn and adjoining sheds are carried on painting, repair work and horse shoeing. The force consists of three barn men, one night man, one blacksmith and one helper. The garbage collection drivers clean, brush and harness their own teams and feed them at noon, and the four stable men clean the stables and feed the teams morning and night. The blacksmith and helper do all the shoeing and wagon repair work, except the replacement of tires. One of the barn men does painting at odd hours. Small harness repair work is done by the barn men, the more extensive repairs being sent to regular harness makers. Veterinary attendance is obtained when needed.

The city now owns no horses and wagons except the 65 used in garbage collection. The rubbish wagons, which are built and repaired at the repair shop, are loaned to the team owners who collect the rubbish. It is recommended that the city purchase all of the teams needed for the work of the Street Cleaning Department, and provide sufficient stables for maintaining them. The substituting of motor trucks for teams was carefully considered, but it was thought improbable that such change would reduce the time and the cost of collection work, except perhaps in collecting ashes from large buildings where there are long hauls to the dumps. It is recommended therefore that 96 additional teams, harness and wagons be purchased and

housed in three new stables located near the three work-centers of the city so that they would not need to travel unduly far before starting to work. Each stable should have a stable foreman, stablemen and hostlers. A veterinary surgeon on about three-fourths time could look after the health of all the horses. He should act also in an advisory capacity in connection with purchasing and condemning horses.

The repair shop for repairing, making and storing the equipment of the Street and Sewer Bureau is a modern three-story brick building. The working floor space is approximately 56x128 feet, or 7,160 square feet, and there are two floors of the same size for storing the smaller equipment. (The elevator is not large enough to permit wagons, sweeping machines, etc., to be taken to the upper floors for storage, nor are the upper floors substantial enough to hold much heavy equipment.) The building is steam heated from a plant located in the basement of the Water Works repair shop adjoining.

The machinery equipment consists of one 5 h. p., G. E. motor, which operates a wornout saw table, one boring machine, one hand saw in poor condition, one large grindstone, one emery wheel, and one doweling machine. This motor is not powerful enough for the work required of it. In addition there is a hand drill and a 10-



WEEKLY RECORDS OF NUMBERS OF LABORERS AND TEAMS USED IN STREET CLEANING AND COLLECTION DURING 1917.



h. p. motor which operates a planer. None of these machines is protected by guard rails or by other device for the safety of those working with and around them.

"There is no fire protection provided in the shop building, either in the shape of attached hose, fire extinguishers, or automatic sprinklers. The intermediate floors and the stored lumber and equipment are, for the most part, combustible, and there is danger of fire from the electric wiring, from sparks from the machines, and from smoking by the men.

"The working force of the shop consists of one foreman and five regular men, and is inadequate to cope with the growing requirements of the bureau which it serves, especially in the handling of quick repairs which frequently are needed to carry on the outside work to the best advantage. In name at least, the shop is a repair shop, but in fact a great deal of the time of the men is devoted to manufacturing street sweepers' push carts, box carts, barrel trucks, broom handles, sand boxes, wagon tongues, single and double trees, street barricades and large rubbish collection wagons. Repair work and painting are done on wagons, sweeping machines, sprinkling carts, sweepers' tubs, push carts, brooms, scrapers, shovels, hose reels, rubbish barrels and other miscellaneous equipment of the Street and Sewer Bureau. Practically all the iron work is done by the blacksmiths of the Water Works shops."

The needs of the shop include fire extinguishers on all floors, additional working and storage space, guard rails about the machinery, an increase to the labor force and, as additional equipment, a hand saw, saw table,

than repaid by the economies and better service which would result from careful planning.

In addition to existing report forms, it is desired to develop more detailed forms for obtaining various kinds of cost data, particularly that necessary to compare the operation of the various types of equipment and work methods, as well as work of similar kinds done in the several districts. Provision should be made also for the preparation and issuance of an annual report by the Department of Public Works. Such a report, if properly prepared, should entail no large amount of work and would prove invaluable. In addition to these records it is necessary, for economy, that equipment be purchased according to a definite plan and from moneys provided therefor in the annual budget of the department. This means that there should be kept a running inventory of equipment and supplies. This inventory should be used in preparing the budget estimates each year.

## STREET CLEANING AND REFUSE DISPOSAL IN SAVANNAH

### Itemized and Unit Costs of Cleaning Different Kinds of Pavements—Destructor Expenditures and Credits—Oiling Catch Basins.

In his report for the year 1917, E. R. Conant, chief engineer of the City of Savannah, Ga., gives the following tabulated cost of cleaning streets in that city during the year:

Cost of Cleaning Streets in Savannah.

Class of Pavement	Area in Sq. Yds.	Percentage of Area Cleaned—Times per Week					Length in Miles	Cost of Cleaning per year, including Removal of Debris	Cost per Mile per Year	Cost of Cleaning per 1,000 Sq. Yd. per Year	Cost per 1,000 Sq. Yd. per Cleaning	Cu. Yd. Debris Removed	Cost per Cu. Yd. Debris Removed
		1	2	3	4	6							
Sheet asphalt ....	140,818					100	5.03	\$8,295.00	\$1,632.65	\$60.74	\$198	5,441	\$1,528
Asphalt block ....	342,190		58	25	9	8	13.52	11,885.00	861.14	34.49	251	4,612	2,579
Granite block ....	122,108		100				6.10	6,843.00	1,121.81	55.74	560	3,000	2,281
Vitrified brick ....	384,849		71	9		20	16.49	15,913.00	960.03	41.09	283	6,507	2,430
Concrete .....	55,932		100				2.97	1,725.00	580.50	30.24	302	810	2,128
Cobble stone ....	68,224	100					3.74	863.00	220.63	12.64	632	424	2,034
Total .....	1,114,121	6.12	58.38	10.51	2.79	22.20	47.85	\$45,524.00				20,794	

power drill, buzz planer, mortising machine and a 15 h. p. motor.

#### RECORDS.

The need for accurate working records and working data of various kinds apparently is not fully recognized at present. The forms in use by the street cleaning force are believed to be fairly satisfactory, but it is necessary that more care be taken to obtain accurate reports. This can be accomplished best by providing in each district a clerk and timekeeper to be responsible for the gathering and reporting of the various kinds of data required.

Accurate working data, charts and maps should be provided, so that the planning of work may be possible. At present there are no records in existence to aid in planning work, and if a foreman is transferred from one district to another, he has no information at hand as to his new work except the word of the laborers. The result of this frequently is a duplication of work of various kinds, such as sprinkling in conjunction with machine sweeping. The cost of obtaining accurate data and preparing the necessary maps and charts would be more

#### REFUSE COLLECTION AND DISPOSAL.

During the year 23,000 tons of garbage and 400 tons of ashes were collected, and 444 carcasses of cows, horses, sheep and hogs. The cost per ton averaged \$2.50, including all labor, care and renewal of live stock and upkeep of equipment. The carcasses were delivered to a rendering plant and \$150 obtained for them. Street sweepings from the city lots amounted to about 1,200 tons and were sold at the lots for \$325.

The destructor plant was operated uninterruptedly during the year and burned 23,400 tons. The cost of operation was \$18,518, in addition to \$1,502 for clinker disposal, \$1,538 for weighing refuse and delivering it to the hoppers, and \$3,246 for maintenance of plant. This total of \$24,804 was partly offset by steam generated by the heat of the incinerator and furnished to the water works pumping plant that effected a saving of fuel of \$8,379, making the net cost for refuse disposal \$16,425, or 70 cents per ton.

The destructor plant went into use in March, 1914. During the 3 yrs. and 9 ms. of operation up to the time

of making this report the total expenditures and credits were as follows:

**Expenditures and Credits of Destructor Plant for Three Years and Nine Months.**

<b>Operation.</b>	
Labor .....	\$61,506
Material .....	6,011
	<hr/> \$67,517
<b>Maintenance.</b>	
Labor .....	\$1,200
Material and repairs, including labor and material .....	7,967 9,167
	<hr/>
Outlays .....	\$2,596
Clinker disposal .....	5,091
Weighing of refuse .....	3,199
Handling cinders for fuel during July and August each year .....	1,900
Fuel purchased .....	500
	<hr/> \$13,286
Grand total .....	\$89,970
<b>Summary of Credit.</b>	
Steam .....	\$25,524
Clinker .....	4,963
Outlays that should be distributed over several years .....	2,596
Material on hand .....	3,000
	<hr/>
Total .....	\$36,083

The total amount destroyed for three years and nine months was 98,717 tons, equivalent to 72.6 tons per day. The net cost per ton was 54.6 cents, the guaranteed net cost of operation, assuming that the plant is worked to its full capacity of 130 tons per day, is 40.4 cents, and if the plant was worked to its full capacity, the net cost per ton would be less than the guaranteed cost. The cost above, however, does not include interest on investment or depreciation.

The average monthly amounts of garbage, rubbish and other refuse destroyed were, for the several years, as follows: 1914, 2,218 tons; 1915, 2,305 tons; 1916, 2,203 tons; 1917, 1,950 tons. The records for 1916 and 1917 reflect household economy under war conditions. The capacity of the plant is 3,900 tons a month.

**OILING AND CLEANING CATCH BASINS.**

Between April and November, during the mosquito breeding season, a force makes regular weekly inspections of all catch basins and the catch basins are treated with a low grade of kerosene or crude oil. This treatment eliminates to a very large extent the mosquito nuisance. The amount expended during the fiscal year for this purpose was \$1,615. The number of oilings made was 54,000, making the cost for oiling approximately 3 cents. The number of catch basins was 1,774, or the cost per catch basin for the period when it was treated was a little less than \$1.00 per catch basin, which must be considered a most economical expenditure for the results attained.

The cost of cleaning catch basins, including the removal of debris taken from same, for the fiscal year was \$6,759, the approximated yardage removed from the catch basins was 3,540 and the cost per cubic yard was \$1.90. The number of cleanings made during the year was 21,698. The cost per catch basin cleaned was 31 cents. The number of catch basins existing at the end of the year was 1,774.

**USE OF CRUSHED STONE.**

Road building and concrete demand large amounts of crushed stone—how large probably few have any idea. The U. S. Geological Survey gives out this month figures for 1917 showing the sales of this material in the United States during that year. The total amount was more than 40 million tons, valued at more than \$29,000,000. Of this total, 66 per cent was limestone, 20 per cent was

basalt and related rocks (trap rock), nearly 8 per cent was granite, nearly 4 per cent sandstone, and the remainder was of miscellaneous rocks. Crushed stone represented 48 per cent of all the stone quarried for all purposes. Owing to labor difficulties and embargoes, the amount in 1917 was 16 per cent less than in 1916.

Of the 1917 total, 37½ per cent was for roads, 23 1-3 per cent was for railroad ballast, and 41 1-6 per cent was for concrete. The highest price was paid for concrete stone, an average of 78c a ton; 75c was paid for road metal, and 56c for railroad ballast.

For road metal, limestone was used for 61 per cent of the amount, trap rock for 25 per cent, granite for 7¾ per cent, and sandstone and miscellaneous for the remainder. For railroad ballast, limestone was used for 76 per cent, trap for 12 per cent, granite for 5½ per cent, and other materials for the remainder. For concrete, limestone was used for 65 per cent, trap for 20 per cent, granite for 8½ per cent, sandstone for 5 per cent, and the remainder miscellaneous. The average price received for sandstone was 92c per ton, for granite, 88c, for trap, 82c, and for limestone, 66c.

Ohio used more crushed stone for road metal than any other state—1,869,282 short tons; also more for railroad ballast—1,053,710. But for concrete, Illinois led with 2,626,922 tons; New York being second with 1,964,264 tons. (Probably the use in the cities of Chicago and New York accounted for this). California was third in the amount of concrete stone used, Ohio fourth and Pennsylvania fifth. In stone used for road metal, New York was second, Illinois third, Indiana fourth, California fifth and Pennsylvania sixth. These six used a little more than all the remainder of the states combined.

**NATIONAL WASTE RECLAMATION**

**Promotion Work to Be Taken Over by Department of Commerce as a Permanent Waste Reclamation Service—Value of Materials Reclaimable.**

We have, in previous issues, referred to the work begun by the War Prison Labor and National Waste Reclamation Section of the War Industries Board with a view to salvaging materials needed by the Government in the prosecution of the war. Announcement was made on January 6 that this work is to be taken over at once by the Department of Commerce and expanded into a permanent waste reclamation service. In making this announcement the department reports that "at the time the armistice was signed the waste reclamation work had been organized by this department to such an extent throughout the country that the total value of the waste material then being reclaimed amounted to \$1,500,000,000 a year. With the expansion in the work that is expected to come under the plans which Mr. Frayne has laid before Secretary Redfield, of the Department of Commerce, for more complete organization, it is estimated that an additional \$300,000,000 a year may be added to the annual value of the waste materials salvaged. In further evidence of the need for such work it can be stated that many of the weapons with which the American forces hacked and blasted their way through the German lines were made from materials which came from dump and scrap throughout the United States.

"At the time the armistice was signed, local reclamation councils had been formed in eight-six cities of the country, and two hundred others were in process of formation, destined to make an endless chain involving the assistance of civic and fraternal organizations as well as school children. Many cities went to the extent of or-



ganizing, and many are planning to organize, permanent municipal bureaus to collect and reclaim all waste materials just as garbage and ashes are collected.

"This tremendous network of organization it is proposed to have the section continue to use after it has been taken over by the Department of Commerce, with the idea in view always of extending the work to the end of conserving materials for peace-time industries. Practically the entire personnel of the section will be taken over in order that there may be no interruption in the policy laid down for the work under way. J. D. Jones, now executive secretary, will be chief of the section. Mr. Frayne will continue his connection in an advisory capacity. From every part of the country have come demands that the waste reclamation work be continued, men in all industries being especially enthusiastic over the possibilities for the future.

"The Waste Trade Board, estimating the values of the waste materials reclaimed during the year by principal items, has compiled the following summary:

Scrap iron .....	\$600,000,000
Scrap metal .....	300,000,000
Old waste paper and other rags.....	200,000,000
Woolen rags .....	75,000,000
Cotton and wool waste.....	100,000,000
Old rubber .....	300,000,000
Second-hand bags .....	25,000,000
Cotton linters .....	50,000,000

"As an illustration to show what can be accomplished through a well-regulated system of waste reclamation, the Reclamation Division of the Quartermaster's Department of the Army during the period from January 1, 1918 under this plan reclaimed 17,789,592 articles valued at over \$20,000,000.

"It is expected that the reproduction of raw and waste products from waste materials will in the future play an important part in the development of American export trade, offering American producers and commercial interests a better competitive chance with foreign rivals without in any way affecting or changing labor conditions by lowering the standards of the workers.

"The extent to which the habit of waste has seized upon American industry before the war is illustrated by the experience which followed the organization by the War Prison Labor and National Waste Reclamation Sec-

tion, Labor Division of the War Industries Board of a local reclamation council in a small city in Pennsylvania. Within a week after the council was organized approximately eighty tons of waste book stock paper was salvaged in that small community, and one of the local banks had returned to a nearby mill twenty-five tons of old books and waste paper that had accumulated in the course of a single year. One result of the waste paper reclamation work was to raise the price of this waste material to the householder and to create a live market for it.

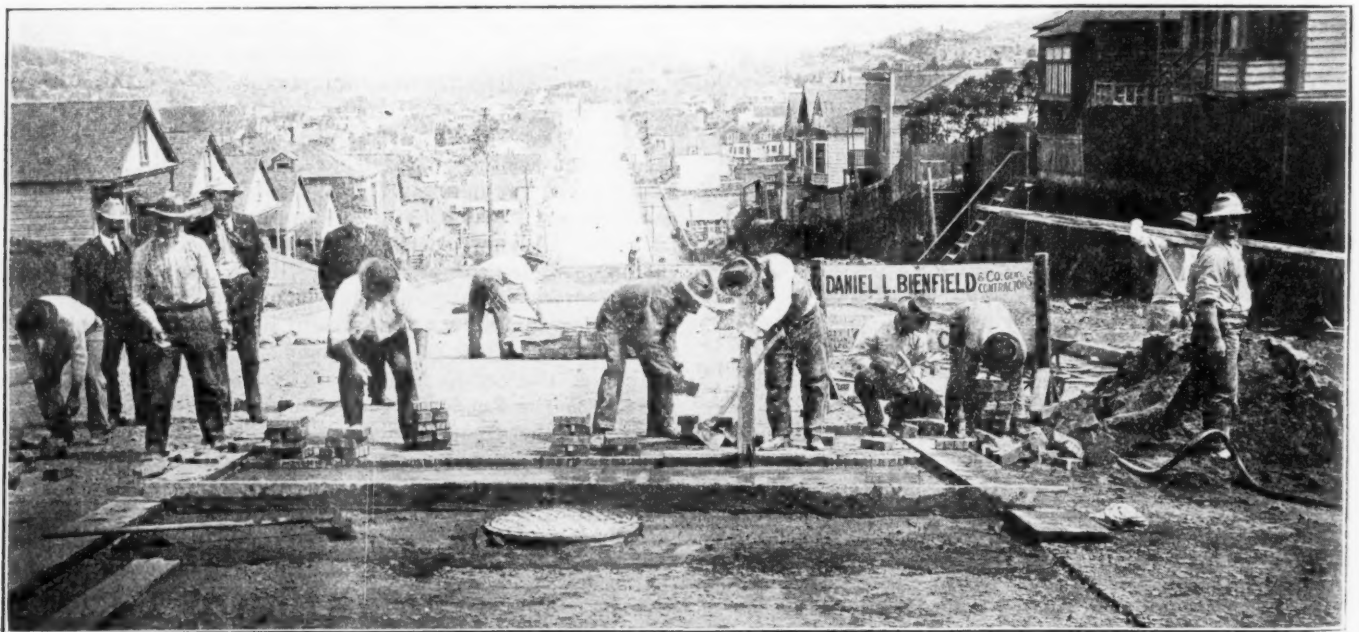
"Before it was determined to transfer the Section to the Department of Commerce as a permanent agency of that department, a canvass of heads of departments and of leaders in industry and labor brought forth unanimous indorsement of the suggestion that the work be continued."

### PORTSMOUTH WATER WORKS.

The water works of Portsmouth, Va., from the point of view of the fire protection afforded, were examined and reported upon last month by the National Board of Fire Underwriters. The inspecting engineers reported that few improvements had been made for several years past because of the prospect that the city would purchase the plant. Bonds for this purpose were sold last November, and the city was expecting to take over the plant this month.

Because of the many government projects in and near Portsmouth, the consumption has more than doubled recently, the average being about seven million gallons. The U. S. Housing Corporation has laid some large mains in connection with supplying the section near the Navy Yard, but this has not helped the city's distribution system, and the pressure in the city frequently falls to twelve pounds and occasionally to seven pounds.

To meet the additional demands, the Federal government has authorized the expenditure of over one million dollars for improvements described in our issue of November 16. In addition to these, 2,200 feet of 24-inch cast iron pipe will be laid through the Portsmouth distribution system. About 8,000 meters are being installed to cut down the present high consumption rate. Improvements in conditions in the pumping station buildings are reported necessary.



LAYING A CENTER STRIP OF BRICK WITH ASPHALT ALONG THE SIDES ON A STEEP GRADE  
The base along the sides is higher than in the center strip, to provide for the thinner asphalt.



## STREET PAVING IN SAN FRANCISCO.\*

Where Brick Pavements Are Used and How Laid—  
Use of Asphalt Pavements—Asphalt  
Repairs—Rock Asphalt.

### BRICK PAVEMENTS.

All streets having more than six per cent grade in the heavy hauling district and more than eight per cent grade in the residential districts are paved with either brick or basalt blocks, an ordinance limiting asphalt pavements to these grades. However, asphalt may be used for grades up to eighteen per cent if strips on the sides or down the center of the street are laid with brick or basalt. In a number of streets the central strip of asphalt is used, giving a straight away course for automobiles, while brick side strips give a foothold for horses and are used by other more slowly moving traffic. The center strip is always made 14 feet wide.

About two years ago San Francisco began laying vertical fibre brick pavements of the so-called monolithic type on light traffic and residential streets, to replace old cobblestone pavements.

The base for brick pavement is in general at least six inches thick, but when laid on a grade exceeding six per cent the thickness may be reduced to four inches. For the thin base the specifications for the size of broken stone are particularly rigid. A one and one-half-inch sand cushion is used. The specifications use for construction are practically those of the American Society for Municipal Improvements.

Bricks used for grades exceeding six per cent are required to be rough and irregular on the exposed surface, or else hillside bricks are used.

Along the street car tracks the space between the web of the rail and the bricks is filled with cement mortar,

consisting of two parts sand to one part Portland cement, and this mortar is required to be in the proper condition and the edge constructed to a straight line before the bricks are laid. The bricks are so laid that, when rolled, the surface of the pavement will be  $\frac{1}{4}$ -inch below the top of the rail.

After being set, each row of bricks is jarred or driven together end on, so as to make the smallest possible end joint; and the rows are barred or driven together side wise to a straight line after every fifth course.

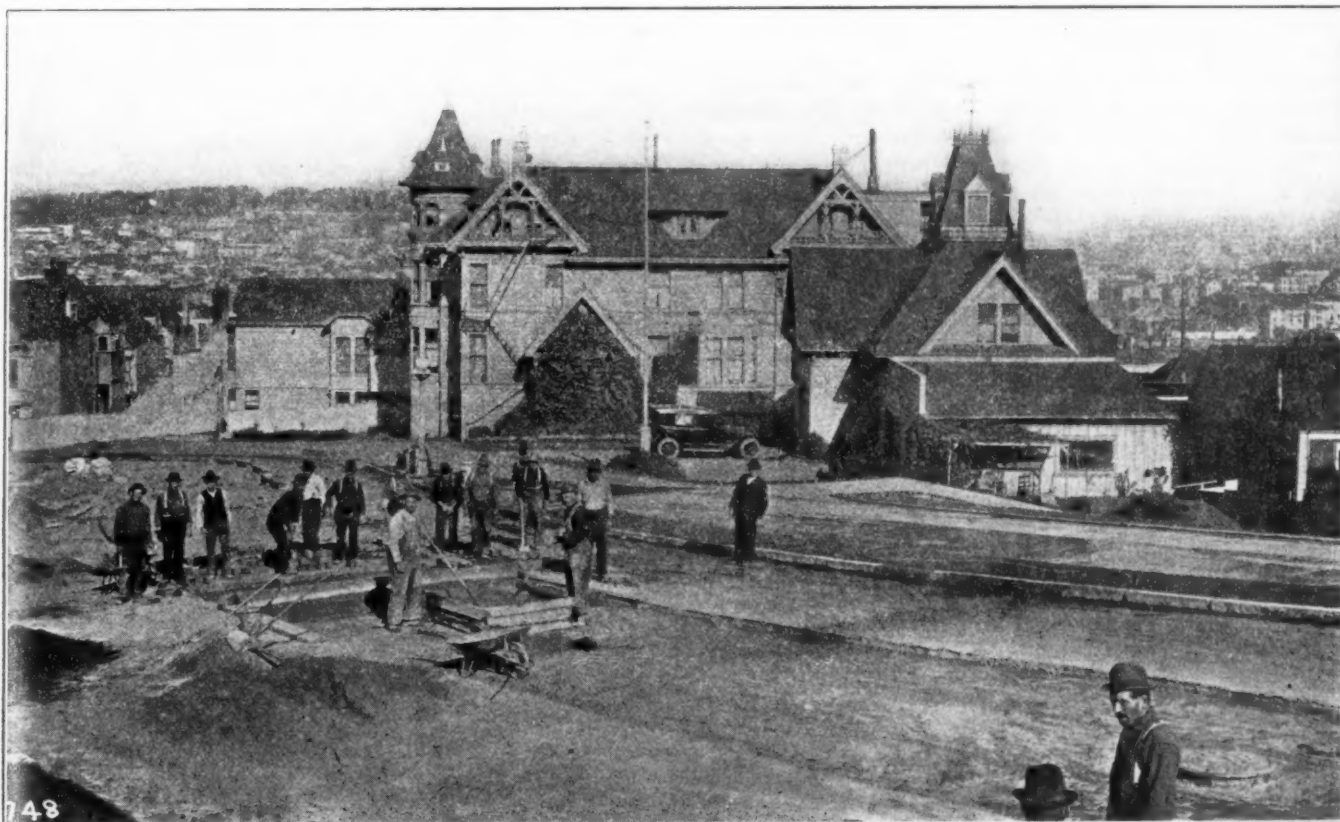
An expansion joint is provided along each curb, space for it being secured by placing two beveled boards face-to-face along the curb before the brick are laid. After the brick have been laid the boards are removed and the space immediately filled with a composition of one part melted asphalt and three parts limestone dust, the asphalt having a penetration of 40 degrees to 60 degrees, District of Columbia standard. The joints are filled with cement grout.

*Cost of Paving.* As an illustration of the cost of brick

### Cost of Brick Paving on Webster Street.

Curb (relining)—labor and teams.....	\$100.70
Grading—labor and teams.....	1,251.13
Concrete:	
Labor and teams .....	\$1,115.01
Cement, 1,297 sacks .....	648.50
Crusher rock, 8 yds. @ \$1.00.....	8.00
Purchased rock, 292 yds. @ \$1.25.....	365.00
Sand, 92 yds.....	92.00
	<hr/>
	\$2,228.51
Brick—22,360 sq. ft.:	
Labor and teams.....	\$635.50
Labor and teams—sand.....	45.50
Labor and teams—brick.....	641.62
Cement—399 sacks.....	199.50
Sand—24 yards .....	12.00
Brick—114,000 @ \$25.50.....	2,907.00
	<hr/>
	\$4,441.12
Total, not including curb.....	\$7,920.76
Unit cost .....	\$0.354

\* Continued from page 3.



LAYING BRICK IN CENTER. ASPHALT SIDE STRIPS ALREADY LAID.

pavement in San Francisco the itemized cost of a paving job on Webster street is given on the preceding page.

#### ASPHALT PAVEMENTS.

The use of sheet asphalt pavements is increasing in San Francisco, chiefly because of their low cost of construction and suitability to conditions. Topeka pavement also has been increasing in use, this pavement being found particularly suitable to streets that have a gradient in excess of that on which ordinary sheet asphalt can be used but on which a comparatively smooth pavement is required. It is used quite generally on residential streets of medium grade. It is especially valued by automobilists for its non-skid properties. The experience of the street paving department leads it to believe that the successful pavement of the future will be of less thickness than formerly and will possess greater non-skid properties, since 90 per cent of the traffic is now rubber-tired.

The city is greatly reducing the skid property of sheet asphalt by scattering No. 3 crushed stone on the asphalt immediately after it has been spread and rolling it with a hand roller, which forces the stone into the asphalt, but leaves the surface of it flush with the asphalt surface. The fine stone in the asphalt is raked out before the broken stone is applied. About six wheelbarrows full of stone are applied to an area of 700 square feet, being scattered so that there will not be three or four pieces of stone grouped in one place, which would result in their working loose and leaving a hole in the surface.

*Repairing.* For repairing the asphalt, three Lutz resurfacing machines are leased, two being in constant operation and the third held in reserve. The two resurfacing machines and the steam roller are operated by a crew consisting of three engineers and seventeen men. The resurfacing heaters burn oil, each using about five barrels daily, and an oil tank accompanies them. The asphalt used for replacing the old asphalt that is raked off or for filling in depressions is prepared at the municipal asphalt plant and is hauled to the streets by two motor trucks of four and five cubic yards capacity respectively. In this class of work the crew operates on one or two blocks at a time, working down one side of the street and back the other, thereby keeping one-half of the street open to traffic all the time.

The municipal asphalt plant is reported to have saved the city a considerable amount in repairing and maintaining asphalt streets. It is operated by twelve men and has, when rushed, manufactured 3,000 cubic feet of asphalt daily.



APPLYING SAND TO COMPLETED PAVEMENT.

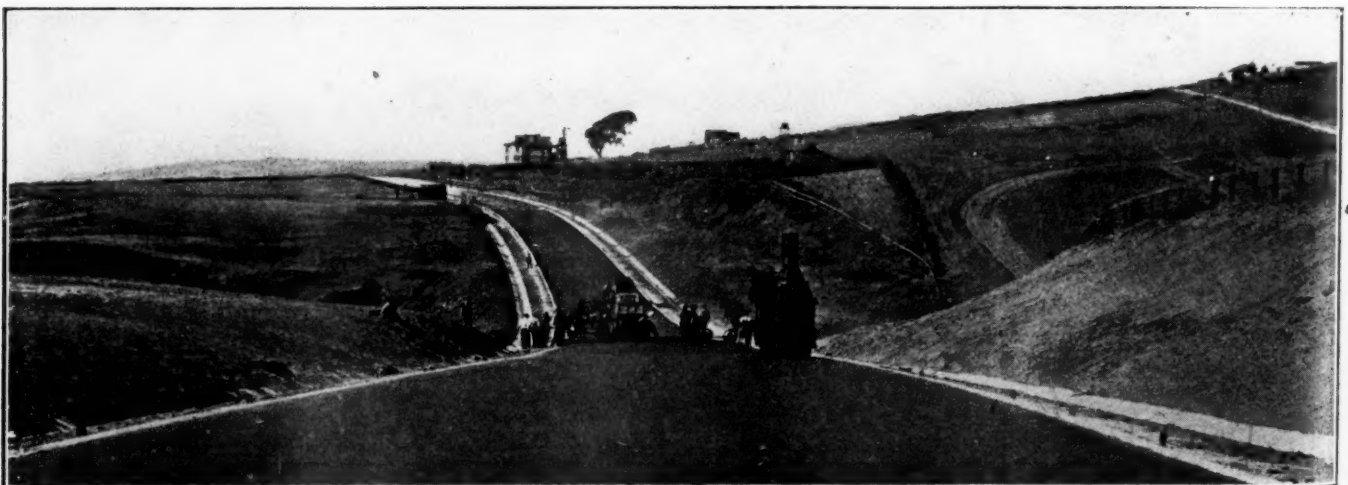
The cost of surface heater repairing in 1916-1917 was as follows, 1,522,792 sq. ft. of such work being done:

Labor .....	\$22,865.30
Teams .....	10,462.50
Oils and greases .....	92.25
Binder, 132.3 tons; asphalt, 8,980.0 tons—9,112.3 tons	
@ \$3.56 .....	32,439.75
Rock, 914 cu. yds. @ \$1.25 .....	1,142.50
Fuel oil, 1863.5 bbl. @ 90c .....	1,677.15
Royalty @ 5c per sq. yd. ....	8,460.00

Total cost .....	\$77,139.45
Unit cost per sq. ft. ....	\$0.0507

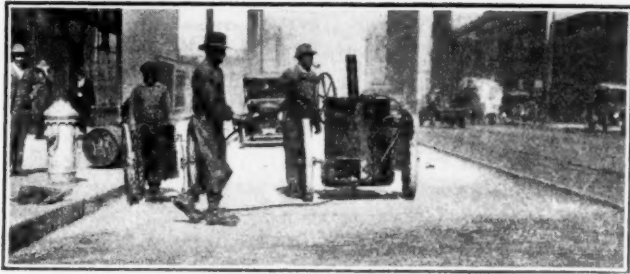
The city requires all asphalt cement to be prepared from California products, either natural asphalt, a mixture of refined liquid asphalt with a solid asphalt, or an oil asphalt. The consistency of the cement must fall within the limits of 65° and 80° penetration.

*Rock Asphalt.* As a large amount of bituminous rock is available in California, the city uses this extensively in paving. Two inches of rock asphalt on a six-inch concrete base is the standard. The bituminous rock is reduced to a fine disintegrated condition by the action of heated, dry air and when so reduced and while having a temperature of not less than 200 nor more than 300 degrees, it is spread and rolled with hot hand rollers weighing not less than 250 pounds per foot width until the surface is thoroughly compacted. Following this, it is rolled with a steam roller weighing not less than 150 pounds per inch width, this roller being used for at least five hours for each thousand-square yards of surface.



ASPHALT WEARING SURFACE, JUNIPERO STREET, SAN FRANCISCO.





SPRAYING MIXTURE OF DISTILLATE AND ASPHALT ON CONCRETE BASE AS BINDER FOR TOPEKA SURFACE.

The bituminous rock is required to be of such quality as to yield not less than nine nor more than fifteen per cent of bitumen when extracted by carbon bi-sulphide, and to contain not more than two per cent of non-bituminous, combustible material. The sand in the asphalt must be clean, hard and moderately sharp and must all pass a screen having eight meshes to an inch; while at least fifteen per cent of the non-bituminous matter must pass a hundred-mesh screen and at least sixteen per cent must be retained on a fifty-mesh screen. In case the natural bituminous rock deposit does not afford material complying with the above requirements, a mixing of several grades of bituminous rock or the addition of the lacking ingredients under suitable manipulation is permitted.

## WATERWORKS OPERATION: RESERVOIR MAINTENANCE.

### Preventing Pollution of the Reservoir from the Catchment Area—Preventing Erosion—Objectionable Features of Swamps.

The catchment area of a reservoir should be kept free from conditions or acts that would tend to pollute the water supply by preventing either soil or pathogenic bacteria or any other polluting matters from being washed into it. It is also desirable to maintain on the catchment area (and at several points on such area, if it be a large one) rain gauges, to be used in studying the run-off to determine the limit of the yield which can be relied upon.

The keeping of the rain-fall records would require a daily visit to the gauges. The maintenance of sanitary

conditions requires more or less frequent visits to all parts of the catchment area, the frequency depending upon the possibilities of contamination. Where there are dwellings, barnyards, outhouses or other features of permanent occupation that might cause pollution of the water supply, the visits should be sufficiently frequent to insure that the conditions and practices which are required of the occupants are lived up to by them. On unoccupied portions precautions must be taken against pollution by campers, picnic parties, unconfined cattle, etc.

*Pollution.* Where the entire catchment area is owned by the city or water company, the enforcement of proper regulations upon any occupants or abutting owners is generally not difficult, although it will frequently require the construction and maintenance of proper fencing around the property. Where there are private properties on the catchment area the occupants of these can be kept under more or less perfect control by recourse to state laws or state board of health regulations in most states. It is generally preferable, however, where it is possible to do so, to use persuasion and retain the good will of such occupants rather than to resort to law, both because it is generally cheaper in the long run, and especially because it is almost impossible to maintain such careful watch as to prevent any infraction of the law where the parties entertain a grudge against the company.

In most states where the company or city is given power by law to prevent pollution of the water flowing to the reservoir it is generally required that any expense necessary for effecting this, other than that required for living up to ordinary sanitary regulations, must be at the expense of the city or company. In some cases it is preferable, as suggested above, to undertake certain improvements without expense to the property owner, even where he might legally be required to provide the improvements himself. For instance, in the protection of the Esopus watershed of New York City's Catskill water supply the city, in order to secure proper sanitary conditions around the farm houses and other dwellings on the catchment area, built more than one hundred sanitary privies of a standard design and erected these where needed at the cost of the city, the cost being about \$17 each, exclusive of hauling the material to the site and erecting it. In some cases where there are villages on the area the city has constructed an entire sewerage system and led the sewage to an outlet below the reservoir. Barnyards, pig sties, etc., should not be permitted near streams that feed the reservoir and there should be



TOPEKA WEARING SURFACE IN STREET LEADING TO CITY HALL.



provisions made that will prevent any matter therefrom being washed into the stream by the run-off of rain storms.

In some cases where it seemed impracticable to provide a sewer system, or where the expense of doing so was greater than could be afforded, the stream receiving the impurities from residences, barnyards, etc., has been purified below the sources of such pollution, this treatment including generally disinfecting, as well as removing suspended matters. Frequently the latter can be secured by building a small dam across the stream sufficient to provide a sedimentation basin in which the solids may collect, thus clarifying the water, which can then be treated with a sterilizing agent, liquid chlorine being that commonly employed. There is danger, however, that freshets will wash the suspended matter from such sedimentation basin on into the reservoir, or will send down more water than can properly be disinfected, and a much safer course is to prevent dangerous pollution from reaching the stream at all. Moreover, where there is a treatment of this kind it generally requires for its safe operation the continual presence of an operator, or at least frequent visits from some one competent to judge whether it is giving satisfactory results. However, it may be cheaper to operate one or two purification plants of this kind treating a small part of the run-off than to treat the entire supply as it leaves the reservoir.

*Erosion.* The washing of soil into the reservoir is objectionable, both because it muddies the water and forms deposits in the reservoir and also because it removes from the catchment area the soil necessary to support vegetation. Both the top soil and the vegetation are desirable for several reasons, one being that they provide a sub-surface storage, which diminishes the run-off from storms, thus increasing the percentage of such run-off that can be utilized. Another is that if the vegetation disappears, erosion continues with greater and greater intensity unless bedrock is at or near the surface. The advantage of trees on a catchment area in moderating the violence of winds that increase evaporation and in keeping the water cool has already been referred to.

The best method of preventing erosion in most cases, where the slopes are not too steep, is by keeping the area continually planted to trees, grass or crops. Where gullies have already been formed or the slopes are quite steep, other methods may be necessary. For slopes an excellent plan is to throw up water breaks at intervals of five or six feet, measured vertically, each water break following quite closely a surface contour. Such breaks can be turned up by a plow or cast up by shovel. These retard the velocity of flow of the run-off, causing it to start at practically zero as it overtops each of the breaks or banks. Eroded soil will collect behind these in time, and it will probably be necessary to raise the water breaks at intervals. However, a better plan, if practicable, is to plant the more or less level ground above the water breaks, when the soil has collected there, with grass or other vegetation that will prevent erosion.

Where the water has cut gullies in the soil, water breaks can be made higher, even possibly five or six feet. Since, however, water permitted to flow over these dams would undoubtedly wash out the soil at the bottom, it is desirable to provide overflows by placing in the bottom of the gully, before building the dam, drain tile or sewer pipe of sufficient size to carry the storm flow in such gully, the upper end of such pipe being continued with a bend and a length or two of pipe set vertically so that water will stand behind the dam to a height a little below its top before overflowing into the next basin, thus permitting the water to deposit any soil carried in suspension.

*Swamps.* Another common cause of undesirable con-

dition in the water is the presence of swamps on the catchment area. Water from swamps is generally unattractive in color, sometimes being a very dark brown. It may have objectionable taste and even odor owing to the dissolved organic matter that it contains, and this matter, when carried into the reservoir, may furnish food for the growth of algae, plankton and other organisms. Also water standing in swamps may furnish an excellent breeding place for mosquitoes. Another objection to swamps is that the yield of the swampy part of a catchment area is generally less, and sometimes considerably less, than that of the dry portions, chiefly because the swamp holds the water spread over a large area and heated by the sun, thus affording opportunity for a considerable loss by evaporation.

These objectionable features can generally be overcome to a large extent by the construction of drains. In improving one of the catchment areas of the Metropolitan (Boston) waterworks, in the case of long and narrow swamps, a ditch was located along that side of the swamp at which the larger part of the yield was received, this ditch being made deep enough to drain the swamp and any water courses in the swamp being connected to it. In the case of larger swamps, drains were constructed entirely around the edge of the swamp and water courses were connected to it or branch drains run into the swamp. The ditches used here were constructed with side slopes of two to one, the bottom being formed of a board twelve inches wide resting on mud sills two inches by four inches by two feet, spaced three feet apart. Along each edge of the board was fastened a triangular strip, formed by sawing a 4 x 4 in two diagonally, this strip being used to support the paving on the side slopes. This paving consisted of stones, laid by hand and carried up to a level slightly above that of the normal water surface, the paving being carried to the top of the slopes at turns and junctions. As the boards were continually under water they did not rot. Any trees present were removed for a width of twenty feet on each side of the ditch to keep out falling leaves. The ditches were made 1½ to 3 feet deep, the excavated material being spread along the side of the ditch, with breaks at intervals to allow the water to flow off. These ditches cost from 25 to 50 cents a foot, with labor receiving from \$1.50 to \$2 a day. The aim was to give a velocity of flow of about two feet per second, and a fall of about one in a thousand was provided in most cases. The maintenance force went over these ditches twice a year with a square-pointed shovel, thus removing any soil or other material which was thrown up on the bank. The maintenance cost about \$25 a year for 25,000 feet of ditch. Most of these ditches were constructed on private land, but the owners readily gave their consent, as in many cases the ditches made it possible to cultivate the land which had previously been swampy.

A considerable number of instances are on record where a water supply has been rendered very unattractive and has even been suspected of causing sickness because of the presence of large or numerous swamps on the catchment area, which conditions have been greatly diminished or entirely removed by proper drainage.

*Forestry.* The raising of trees on catchment areas both affords the advantages already referred to and may be used as a means of profit through the sale of the timber. Moreover, a number of cities have found it good policy to permit the reservoir and its immediate surroundings, and possibly the entire catchment area, to be used as a place for pleasure and recreation by the citizens, and the presence of trees assists greatly in this. This will be discussed in the next instalment.

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## WHAT IS A STREET?

Probably few if any readers of this paper would have any hesitation in agreeing that a street is a public way for traffic passing in front of building sites (to distinguish it from a country highway, which does not pass in front of building sites), and that the term includes gutters and sidewalks as well as roadway. The term is so used by Nelson P. Lewis, I. O. Baker, Austin T. Byrne, Arthur H. Blanchard (these names are taken at random) and every other American engineer who has written concerning streets, so far as the writer is aware; and by the writers on city planning also. When we speak of "Main Street" we mean both sidewalks and roadway, from property line to property line, and not merely the roadway. A country "road" has no sidewalks, properly speaking, but vehicles may travel over any part of it, although the grading and surfacing is generally confined to a part of the width only as a matter of economy. When sidewalks are defined and constructed we call the highway a "street," and vehicles are confined to a definite width, corresponding in this respect to the entire width of the country "road," and this vehicular space is then properly called the "roadway" part of the street.

Considered from a legal point of view, we find in McQuillin's "Treatise on the Law of Municipal Ordinances" the following definition: "'Street' is a generic term, and includes all urban ways which can be, and are, generally used for the ordinary purposes of travel. Street, in a legal sense, usually includes all parts of the way—the roadway, the gutters and the sidewalk."

The reason for explaining at length what it might be supposed all would accept as established usage and undisputed, is that the chairman of the National Highways Transport Committee, William P. Eno, in offering for universal adoption a set of "General Highway Traffic Regulations," defines street as "that part of a highway intended for vehicles"—what is commonly known by municipal engineers as the roadway. It may be that he does not propose this definition of the term for general use, but only for the purpose of these regulations (as a boy roller-skating in the roadway answers to the

definitions of "vehicle," "driver" and "horse"); but we can conceive of no reason why "roadway" would not serve his purpose equally as well, and its use would avoid violation of precedent and of the practice of those who use highway terms with discrimination and understanding.

In our opinion it would be very unfortunate and confusing to the public if an effort should be made to secure the use, in traffic regulations, of a meaning of this word that has not been and certainly will not be accepted by engineers, city planners, and others who deal professionally with the planning, constructing and maintaining of "streets."

## SOLDIERS' MEMORIALS.

What form of memorial shall we adopt to commemorate the participation of our soldiers in the World War, our pride in them and our mourning for those who will not return? This is a question that is being asked in villages, cities and state capitals throughout the land.

The stone or iron "soldiers' monuments" that were erected after the civil war are no longer considered the only appropriate form; instead, we find memorial roads, trees, parks, buildings, hospitals and other ideas proposed, most of them embodying the idea of serving some useful purpose. Toledo and Catasauqua, Pa., are illustrations of a large city and a small one which have adopted the idea of memorial buildings, the former proposing to raise the necessary funds partly by appropriation and partly by private contributions, the latter wholly by popular subscription. The Catasauqua building is to include a room in which will be placed war records and trophies and a roster of the city's soldier sons, as well as an auditorium and other features suitable for making it a center of community life.

There also would seem to be special appropriateness in hospital buildings; while for a small community a park with a rest house in which a commemorative tablet would be placed has much to commend it. It has been suggested also that a tree be planted or assigned for each soldier given by the community, either along a "memorial road" or in a park. The idea of a memorial road is suggested by the Lincoln Highway, and would seem to be especially suitable as a county or state memorial for those who went from farms and settlements too small to be able to provide local memorials.

Whatever the form adopted, let us hope that competent advice will be taken in the designing. The crudities in the way of statuary that were sold by the ton to many cities after the Civil War will not, we believe, be duplicated in the twentieth century; but it is none too certain that some memorial committees will not repeat the effort to get the maximum size obtainable for the funds available. Mere bigness is never artistic, nor is it often impressive in the way that a memorial should be impressive. If a road is built, let it be of the most durable pavement laid in the best manner, and in the most effective location. If a building, the aim should be to make it impressive by its architectural beauty and simplicity rather than by size or ornateness.

A matter that should not be overlooked is the maintenance of the memorial. A road, a building or a park that has fallen into disrepair is a disgrace to the municipality that built it; and where it is a memorial, it suggests that what it was intended to commemorate has been forgotten. Maintenance requires funds, and the providing of these should not be left to chance or an afterthought, but should be made a part of the plans adopted at the outset.



## The WEEK'S NEWS

**Record Highway Proposals Throughout Nation—Philadelphia's Water Finances—Secretary Daniels Threatens Philadelphia with Vice Ban—Cleveland's "Striking" Firemen Answer Alarm—New York State's Constitutional Amendments Were Approved—Assessing Uncompleted Buildings in New York City—Six-Cent Fare Denied in Detroit—Finances of Boston Elevated Under Trustees—Cedar Rapids Voters Approve Higher Fare.**

### ROADS AND PAVEMENTS

#### The Country's 1919 Highway Plans.

Washington, D. C.—The Division of Public Works and Construction Development, which has just been organized by the Department of Labor, has obtained from the Bureau of Public Roads and Rural Engineering of the Department of Agriculture a compilation of estimates of the amount of road work to be undertaken in several states during 1919. These indicate about \$300,000,000 of construction for the country. Cash expenditures from all sources on highways for 1916 were, according to the official reports to the Department of Commerce, \$272,634,424. Figures for 1917 are not yet available, but, in view of the restrictions placed on the movement of material and on the construction of roads generally, except where they were needed for war purposes, it is probable that they were much less. The definite estimates so far obtained by the Department of Agriculture indicate the following expenditures for roads this season: Maine, \$1,500,000; Rhode Island, \$90,000; Connecticut, \$4,000,000; New York, \$12,000,000; New Hampshire, \$175,000; Kentucky, \$1,500,000; Alabama, \$1,000,000; West Virginia, \$16,000,000; Illinois, \$9,000,000; Iowa, \$15,574,000; Louisiana, \$4,674,000; Texas, \$20,000,000; Nebraska, \$1,657,089.07; North Dakota, \$3,000,000; Wyoming, \$653,000; Colorado, \$3,900,000; California, \$20,000,000; Arizona, \$900,000; Nevada, \$1,148,849.80; Idaho, \$1,000,000.

#### Federal Road Legislation Plans.

Washington, D. C.—Senator John H. Bankhead, chairman of the Committee on Post Offices and Post Roads, to which all highway legislation in the upper branch of Congress is referred, in commenting upon bills now pending, recently made this plea for road construction: "The war showed what the national strength could accomplish in the swift construction of rapid transit highways and the use thereon of rapid transit vehicles. The nation trained its engineer corps and sent them to Europe equipped for the quick construction of roads. The part which the United States took in the decisive campaign was rendered possible by the use of automobiles and motor trucks over rapid transit highways. Now that the war is over the question arises, Are not highways as vitally important for the conduct of peace as they were for the conduct of war? With half the world going to bed hungry every night and millions doomed to starvation, is not the swift construction of the highway to the acre that produces as urgent a necessity as were the roads in the battle zone? And if the need is as urgent, should the nation slacken its effort or permit its road building equipment to be sold or dissipated? Should it not rather increase its efforts in this direction and proceed with the construction of highways at home on a scale commensurate with the importance and urgency of the need? It is for the Congress of the United States to answer these questions. Measures are pending designed to meet the situation, three of which are as follows:

"(1) Joint resolution 200, authorizing the transfer from the War Department to the Department of Agriculture of all available dispensable and suitable war material for distribution to the highway departments of the several states for use on the highways.

"(2) Senate bill 5088, increasing the present unexpended

appropriation of about \$60,000,000 for road purposes by the addition of \$125,000,000 for expenditures to June, 1920, and \$100,000,000 a year thereafter for four years. It is also proposed to increase the appropriation for national forest roads of \$1,000,000 a year on the present ten-year road building program by a sum sufficient to construct 17,000 miles of forest roads, which the Government has already planned and which are necessary in order to utilize the vast resources of the national forests. The estimated cost of these roads is \$50,000,000. Amendments to the present road act, freeing it from undesirable limitations, are also planned, one of which will enable the Government to construct at its own cost links in important highways which could not otherwise be constructed.

"(3) House bill 13308 carries an appropriation of \$1,000,000 for an extension of the motor-truck parcel-post service. This is an increase from the \$300,000 provided in the last Post Office Appropriation Bill, which also authorized the War Department to transfer to the Post Office Department motor trucks for which it had no further use. Under last year's appropriation twenty-seven motor-truck routes were established, all but one of which were operated east of the Mississippi River.

"The results, even in the initial stage, are such as to warrant an increase in the number of routes and their extension to the trans-Mississippi region, where rail and water facilities of transportation are altogether inadequate. The proposed transfer of 10,000 motor trucks from the War Department to the Post Office Department renders it possible to make a great extension of this service at a minimum cost. It is proposed to increase the appropriation for this service to \$10,000,000. To store these trucks would cost \$600,000 a year. To dump them on the market would be disastrous. To turn them loose to aid agriculture in the movement of farm products to the consumer would be statesmanship. To adopt such a policy would be but to follow historic precedent.

"Senate bill 5088 has the approval of President Wilson and Secretaries Houston and Baker. The proposition not to lessen the national endeavor in road construction now that peace has come, but merely to transfer the scene of action from Europe to the home land, is but the response to a universal demand. The public rejoices to see the trophies of war now being brought back from Europe. Equally popular will be the sight of machines that built the United States road to the Rhine at work building connecting highways from Canada to the southern boundary and from the Atlantic to the Pacific through every state in the Union."

### WATER SUPPLY

#### Meter Receipts Show Rates Fair.

Philadelphia, Pa.—A falling off of about \$250,000 in water rent collections during last year, it is explained by Carleton E. Davis, chief of the bureau of water, has been anticipated by the municipal officials. The receipts indicated, so he declares, that the returns from metered properties were satisfactory and that the rate now in force is fair to both the consumer and the city. "No attempt should be made," the chief continued, "to compare the receipts of the year with those of another until the nature of the receipts serving as a standard of comparison is known. The receipts for 1917 include \$150,000 which was due in 1916, but which could not be collected until 1917 because of the transition from one method of collection to another, due to a new ordinance. The receipts in 1918 from new properties show a decrease of \$41,000 from similar returns in 1917. In other words, there has not been in 1918 the normal rate of new building operations, and the water rent revenues of the city have been correspondingly decreased. This curtailment in building operations has



been reflected in another decrease in water bureau revenues for the item of pipe frontage, the receipts in this one item in 1918 being \$21,000 less than similar receipts in 1917. The 1917 meter receipts responded to the increase in the meter rate that was effective the beginning of that year. This meter rate carried both gains and losses. The gains were effective January 1, 1917; the losses were not effective until January 1, 1918. The city is still benefiting by the gains because they are continuous, but during 1918 it was obliged to accept the losses incident to the new ordinance, and these have decreased the somewhat fictitious revenue record for 1917. The war and the influenza have had a definite influence on the 1918 revenues, and may result in a fictitious increase of the 1919 revenues. With its force decreased by war conditions and with the further handicap of the influenza epidemic occurring at the height of the meter billing period it was impossible for the water bureau to render the last quarter's meter bills early in November, as is contemplated by the ordinance. As a result probably from \$50,000 to \$100,000 of revenue earned in 1918 will not be collected until 1919."

#### Memorial to Soldiers Who Guarded Water Supply.

New York, N. Y.—A memorial is to be erected by the officers and men of the First Provisional Regiment to the members of the regiment who have died in service while guarding New York City's water supply during the war. A twenty-ton boulder from Bonticou Crag, in the Catskills, will be moved to Sleepy Hollow Cemetery, on the shore of Tappan Zee, by enlisted men of the regiment under the supervision of officers. The monolith will bear a tablet on which the names of the regimental dead will be inscribed.

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### STREET LIGHTING AND POWER

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#### Court Upholds City's Share of Gas Receipts.

Columbus, O.—Ordinances passed in 1899 by the city of Columbus, requiring the Federal Gas & Fuel Company to pay annually into the city's general expense fund 10 per cent. of the gross amount received for the sale of gas to citizens, have been in effect upheld by the Supreme Court at Washington.

#### Hydroelectric Rates Must Consider Coal Costs.

Westfield, Mass.—The state gas and electric light commission has upheld the rates established by the Turners Falls Power and Electric Company and this town in a five-year contract signed last April. The town owns a municipal lighting plant which it has operated since 1899 and has generated in its station the electricity distributed. The Turners Falls company recently entered Westfield to supply energy to the Springfield street railway. The question of buying electricity from the company was then under debate, and in the franchise it was stipulated that the municipality should be free to buy and the company be required to sell to the town such energy as it might need at any time for distribution to its inhabitants or for municipal use. The subsequent contract calls for the delivery to the town for five years of all the electricity required by it, with a maximum of 2,000 kw. continuously available at the point of delivery and such additional amounts available as may be necessary upon twenty-four hours' notice to the company. The following rates were established: For the first 1,000,000 kw.-hr. delivered in any operating year, \$0.012 per kilowatt-hour; for the next 1,000,000 kw.-hr., \$0.011; for the next 1,000,000 kw.-hr., and for all energy in excess of 3,000,000 kw.-hr., \$0.009. A coal clause provides for an increase in price to be paid by the town equivalent to 1 mill per kilowatt-hour for each dollar in excess of \$5 per gross ton for coal delivered at the company's Hampden steam plant in Chicopee, and a corresponding decrease of 1 mill per kilowatt-hour for each dollar of coal cost below \$4. At present the company's coal cost is about \$8 per gross ton, making the rates 3 mills higher than the foregoing, with a range of from \$0.015 to \$0.012. In accordance with the contract, the town requested the commission to pass upon the fairness of the

coal clause. After investigation, the commission's decision says:

In common with all hydroelectric companies, the Turners Falls company is obliged to supplement its water-generated by steam-generated power in order to provide reliable and continuous service, and it has recently put in operation a modern and well-equipped steam plant at Chicopee for this purpose. To what degree it will be called upon to supplement the [Connecticut] river's supply is a matter of almost pure speculation, subject as the problem is to the immutable laws of nature, but that year in and year out the plant will be called on to supply a substantial amount is certain. It is true that the cost of coal does not directly affect the cost of electricity generated by water, but it must be borne in mind that every unit of hydroelectric energy has to carry the cost of the auxiliary which takes the burden when the water power fails. In view then of all the circumstances affecting the parties to this agreement, the so-called excess-coal-cost charge provision of the contract may in general terms be regarded as reasonably applicable and workable as a fair measure of the increased cost due to coal in a modern and efficiently managed station such as this is. Taking into account then the life of the agreement, the board is of the opinion that the rates and excess-coal-cost charge are fair and do not require modification. The return of normal conditions and a longer experience with the bulk supply of electricity will test the soundness of this conclusion before the present agreement expires and enable the town to see what modification, if any, should be required upon its renewal. Meanwhile the citizens of the town may feel assured that in the mind of the board sound and good judgment has been exercised in securing for the town an abundant and reliable supply of electricity upon favorable terms.

#### Lighting Contract Renewed.

Woonsocket, R. I.—The Woonsocket common council has approved, following recommendation of the lighting committee, to contract with the Blackstone Valley Gas and Electric Company for a five-year period from July 1, 1918, for arc and incandescent street lights at the same prices that have prevailed on the last contract—namely, \$25 per year for 292 80-candle-power incandescent lights and \$85 yearly for 261 luminous arc lights, 76 volts, at a rate of \$25 per year for incandescents, all new lights to be at the same price. This contract is to continue after July 1, 1923, until terminated by ninety days' notice by either party.

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### FIRE AND POLICE

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#### U. S. Again Warns Philadelphia of Vice.

Philadelphia, Pa.—Secretary of the Navy Daniels has notified mayor Smith that immediate steps must be taken to check vice in Philadelphia or the Federal Government will exercise its police powers for the protection of soldiers and sailors. In a letter to the mayor Secretary Daniels quoted a charge by Lieutenant-Colonel Charles B. Hatch that "the conditions in Philadelphia have reverted, so far as the protection of soldiers and sailors is concerned, to the old conditions," which led to the Fosdick report and caused the navy to act last spring. Secretary of War Baker joined Secretary Daniels in denouncing the recent laxity of the city authorities, and the Daniels letter informed the mayor that, acting in conjunction with the War Department, "unless action is taken to give adequate and full protection to the soldiers and sailors in Philadelphia steps will be taken as will give the needed protection to thousands of young men in uniform who either must visit Philadelphia or be denied by the War and Navy Departments the liberty which ought to be given them." It is said that the following steps might be taken: A definite and final ban on Philadelphia as a port of debarkation, even for the soldiers of the city returning from France. The detail of a large force of military police, whose powers would supersede all those of the city police, for the protection of soldiers and sailors and the closing of dives. The insistence that Superintendent Robinson be again relieved. Secretary Daniels' letter says:

"Much against my inclination I found it necessary last spring to write you a letter, calling attention to the open and flagrant vice conditions in Philadelphia, which were having a serious effect upon the discipline and morals of the navy and army personnel stationed in or visiting in your city.

"At that time, in response to the request of this department, you assured Lieutenant-Colonel Charles B. Hatch, the representative of the Navy Department, that you would take action. This you did, and it resulted in immediate improvement of conditions. This improvement continued until recently, when I am now informed that the conditions in Philadelphia have reverted so far as the protection to soldiers and sailors is concerned to the old conditions which prevailed prior to my communication to you last spring, and that the change of your

policy was made in violation of the promise which you made to Colonel Hatch, the representative of the Navy Department. "If these conditions, which have already grown materially worse, continue to be maintained it will be extremely difficult, if not impossible, for the War Department and the Navy Department to fulfill the solemn obligations made to the parents and communities from which these boys have come and to return them to their homes, in the words of the President, 'with no wounds except those borne in honorable conflict.'"

"In view of the seriousness of the situation, fraught as it is with grave consequences, we must insist that during the period of demobilization the authorities at Philadelphia will suppress prostitution and other vicious conditions, and intrust this duty to those who are able to cope adequately with the situation. The necessity of such action is quite, if not even more, important in the period of demobilization than in the period of mobilization."

"I have had a conference with the Secretary of War with reference to the conditions at Philadelphia, and I am writing to you to say that we are both in accord, and unless necessary action is taken to give adequate and full protection to the soldiers and sailors in Philadelphia steps will be taken as will give the needed protection to the thousands of young men in uniform who must either visit Philadelphia or be denied by the war and naval authorities the liberty which ought to be given them. It is our duty to see that they have the same wholesome surroundings in Philadelphia that are afforded them in other cities, and this duty will not be evaded."

This action follows a charge by Lieutenant-Colonel Hatch that mayor Smith had broken faith with him in permitting James Robinson to be restored to the post of superintendent of police, with full powers. Colonel Hatch said that when he first learned through the newspapers that Robinson had been discharged from the army and would return to the police department to become the superior of captain Mills, who had been placed in charge at the suggestion of the naval authorities, he and the mayor had held a conference. According to Colonel Hatch the mayor gave him to understand that when Robinson returned captain Mills would not be shorn of any power; that Robinson would have the same small authority which he possessed just before he obtained leave to go into the quartermaster's department of the army, and that Mills would have full authority to continue the work of co-operation with Colonel Hatch that had been agreed upon when the matter was originally taken up by the municipal and naval authorities at the outbreak of the war. Accepting this assurance Colonel Hatch said he had recommended that Philadelphia be made a port of disembarkation for troops returning from the war zone, a concession which the mayor and many public-spirited citizens had sought. Mayor Smith asserts that when he discussed the subject with Colonel Hatch he had merely said that he "presumed" that Robinson would not be given full authority, but that later, when he discussed the matter with director Wilson, of the department of public safety, he had found that the director had decided upon the matter otherwise. The outcome was that captain Mills has been directed to take charge only of the vice situation, and has been made subordinate to Robinson, who has been ordered to "assist" Mills in any manner "possible."

#### Film Explosion Caused Fatal Fire.

Pittsburgh, Pa.—Ten persons are dead and a score of others suffering from injuries as the result of a spectacular fire and explosion which wrecked a film exchange building in Penn avenue. The damage is estimated at \$1,000,000. Trapped by walls of flame which turned the interior of the building, an eight-story brick structure, into a raging furnace, some of the victims, mostly women, were hurled from the building by the explosion, while others jumped from windows or were saved in thrilling rescues by firemen. That a lighted cigarette, discarded into a pile of film scrap by a careless employee, caused the fatal explosion was the opinion expressed by Frederick Sauer, owner of the building, at a joint investigation held by the county, city and state authorities. Present at the inquisition, which was held at the coroner's office, were coroner Samuel C. Jamison, S. A. Dies, chief building inspector of the city, and S. E. Richardson, an inspector under the state department of labor and industry. In addition to Sauer, William Schoppol, watchman of the building, was interrogated. When Sauer was called to testify he admitted that he had been warned by city officials of the danger of the building in not having proper safety devices during the

occupancy of a film establishment. He stated that he began last summer to make changes, placing a fireproof stairway in the building, concrete walls between the film rooms and erecting fireproof doors at each exit. He is of the opinion that had the occupants of the room where the fire originated closed the doors there would not have been any explosion. He admitted that there was no water sprinkling system in the building or hose connections on each floor. These safety devices were to be made, he said, but the contractor had not begun to make the repairs, although he had let the contract some time ago. Thus far those conducting the inquiries allege that they have found violations of the law. Five points were brought out by these investigators, as follows: First, on nearly every floor violations of the regulations for film safety; second, unprotected moving picture machine which had been in operation; third, films piled in boxes on top of radiators; fourth, rubber hose gas connected with pipe to obtain fuel for melting metal; fifth, cigarette butts in rooms on nearly every floor.

#### "Striking" Firemen Respond to Alarm.

Cleveland, O.—With two-thirds of the city's firemen absent from the stations in their effort to enforce the eight-hour day fire started in the four-story Euclid Building, in the heart of the downtown district. A general alarm brought twelve fire companies to the scene. With the arrival of fifty firemen who were off duty, including several engineers who manned idle engines, the fire was put under control. The Euclid Building was destroyed. Fire chief Wallace estimated the loss at \$100,000.

## GOVERNMENT AND FINANCE

#### Constitutional Amendments Approved.

Albany, N. Y.—The three amendments and the one proposition submitted to the voters of this state at the November general election were all carried, according to the official tabulation of election returns in secretary of state Hugo's office. Amendment No. 2, permitting the construction of a state highway from Saranac Lake and thence to Old Forge by way of Blue Mountain and Racquette Lakes, and of particular interest to the motoring public, was carried 609,103 to 299,899. Amendment No. 1, relating to the contracting of state debts and restricting the debt period to the probable life of the work and authorizing the issuance of bonds to be paid in annual installments by direct tax or legislative appropriation, was carried, 628,199 to 253,040. Amendment No. 3, of particular interest to residents of Utica, in that it pertains to a section of the Erie Canal in that city, was carried, 586,863 to 269,919. The one proposition submitted and which pertains to the sale of bonds for the construction and improvement of state and county highways, etc., was carried, 766,823 to 266,822.

#### May Assess Uncompleted Buildings.

New York, N. Y.—Supreme court justice Lehman, in a recent decision in the suit by the Orinoco Realty Company against the city tax department for a reduction of assessment establishes the fact that a new apartment building, still requiring a cleaning-up process and lacking a certificate of occupancy from the tenement house department on the official assessment date, October 1, is assessable. The realty company brought suit against assessing the building on the ground that it was not complete on October 1, and under section 889A of the charter should not have been assessed by the tax commissioners. The court said: "The statute does not provide that the construction of a building must be absolutely completed before it can be assessed for taxation. It may be assessed, even though it is still in course of construction where the construction has progressed so far that the building is ready for occupancy. No definite rule can, in my opinion, be laid down as to the stage a building must reach before it is ready for occupancy. Obviously, that depends to a great extent upon the purpose for which it is intended."



### Council to Change Chairman Every Day.

Detroit, Mich.—By a vote of six to three, Detroit's councilmen-elect have decided at an informal meeting that the chairmanship of the committee of the whole, which is to meet daily, will be rotated among all the members of the council. Opposition to the plan was voiced chiefly by aldermen William P. Bradley and John C. Nagel. Alderman Bradley contended that "what was everybody's business was nobody's business" and that unless there were fixed chairmanships work of the council would lag. Alderman Simmons expressed belief that the personnel of the council was such that what was everybody's business would be everybody's business and the councilmen would be as diligent under either system, but that with no permanent chairmen every member would have to keep himself posted on all questions, to the city's profit.

## TRAFFIC AND TRANSPORTATION

### Commission Denies Six-Cent Fare Plea.

Indianapolis, Ind.—According to an opinion handed down by the state public service commission the Indianapolis Traction & Terminal Company has been denied an increase in fare to six cents. The company is, however, permitted to continue to charge a five-cent fare until 100 days after the signing of the treaty of peace, but it was instructed to withdraw the one-cent charge for transfers on December 31. The commission says that in spite of the apparent increase in facilities the service rendered by the company remains inadequate. On the important subject of a return on the investment the commission says in part:

Petitioner does not plead for an order based on return on reasonable and prudent investment. The plea is for an order establishing rates that will maintain the solvency of petitioner by the payment of operating expenses and "maturing obligations."

In its original decision the commission passed finally and negatively on petitioner's contentions that fixed charges of securities, issued and outstanding, constituted legal and binding obligations which the state must recognize. With equal decisiveness the commission declined to recognize, even in acting under the emergency section, the inclusion of annual sinking fund charges as an obligation of patrons.

The commission reiterates its declaration that it will not become confused as to the mandate of the legislature, which, according to the interpretation under which it proceeds, is to take the value of the property used and useful for the service of the public as a basis for rates.

It is inconceivable that the legislature, in the enactment of section 122, contemplated that the state should (1) guarantee, in times of emergency, values which never existed; (2) protect excess securities; (3) make good losses caused by negligence in collection of revenues, or (4) reward a lack of thrift in times of prosperity.

The emergency section does not seem even to extend to the most meritorious petitioner the assurance of a return on investment that might be declared to be the proper rate of return in a normal period. To use the emergency section to protect obligations for which the commission is unable to find some reasonable basis in values would amount to making the state the protector of unwarranted obligations at the very time when there is a strong tendency for legislation to restrict issuance of unwarranted securities of all kinds.

### Boston Elevated Under Trustee Operation.

Boston, Mass.—In announcing the recent increase of fare to eight cents, the board of trustees operating the company under the public control act issued a statement pointing out that the company fell short of its required revenue by \$2,741,000 for the period from July 1 to Nov. 1. A 5-cent fare prevailed during July and a 7-cent fare was in effect during August, September and October. The cost of the service as defined by statute includes operating expenses, maintenance, fixed charges, a provision for depreciation and obsolescence and dividends on the invested capital. War conditions have enormously increased the cost of operation, and by reason of the shortage of labor the service has been necessarily impaired and provided on an unpreventable increase in cost. The increase in the cost of labor decreed by the War Labor Board has advanced the operating cost more than \$3,000,000 yearly. The trustees believe that \$2,000,000 annually should be allowed for depreciation, and the law requires the payment of \$1,360,220 in dividends. The 7-cent fare produced an increase of only 23 per cent in gross earnings during August. During the period of the influenza epidemic the revenue fell off so that an average of only 9 per cent increase was obtained. The trustees considered fixing a fare above 8 cents, but

deferred putting it into effect. The trustees realize the necessity of providing for adequate and satisfactory service and have already ordered new cars and equipment, which, received and installed, will materially improve conditions. More dependable and satisfactory service is also anticipated with the return of more normal industrial conditions. The income of the system for the four months from July 1 to Oct. 1, during which it has been under public control, is concretely expressed in the following table:

From 5-cent fares in July.....	\$1,525,548
From 7-cent fares in August, September and October .....	5,326,483
Total from fares.....	\$6,852,031
From special cars, etc.....	45,859
From advertising privileges at stations, etc.	97,619
From other companies for use of tracks, etc.	16,627
From rent of buildings, etc.....	23,243
From sale of power, etc.....	12,209
From interest .....	32,255

Total income..... \$7,079,847

The total income from all sources for the corresponding four months of 1917 was \$6,520,576. The total cost of service, exclusive of dividends, for the four months of control under public management, has been \$9,397,239 as against \$6,559,335 for a similar period in 1917. A factor in this extra cost is the increased labor payments which were brought about through the decree of the National War Labor Board. Another important factor in the cost of service has been the payment for rent of the Dorchester Tunnel. The payment of dividends required under the act totaled \$424,240 during this time, making the total cost of the service in accordance with the legislative act \$9,821,479, as against \$6,977,225 last year, an increase of \$2,844,254. The deficiency, therefore, between the income and cost of service for these four months from July 1 to Oct. 1 amounts to \$2,741,631. The trustees also submit the following comparative table of income from fares:

	1918.	1917.
July .....	\$1,525,538	\$1,570,856
August .....	1,915,260	1,544,354
September .....	1,722,738	1,533,629
October .....	1,688,495	1,639,196
Four months .....	\$6,852,031	\$6,288,035

### Voters Approve Higher Fare.

Cedar Rapids, Ia.—At a recent special election the voters authorized the Cedar Rapids & Marion City Railway to increase its fares to six cents by a majority of 78. It went into effect at once. Previous to the election a commission made up of representatives of the Chamber of Commerce, union labor and leading citizens recommended to the city council that the increase be granted. The fares on the lines of the Iowa Railway & Light Company, which also operates in Cedar Rapids, were not covered by city franchise, but the Cedar Rapids & Iowa City Railway, which is included in the system of the Iowa Railway & Light Company, assumed a six-cent fare at the time that rate was granted to the Cedar Rapids & Marion City Railway. Last February the local branch of the railway union submitted a new wage demand to the Cedar Rapids & Marion City Railway. The matter was debated for several weeks. Finally the men were informed that the increase in wage would be allowed effective at once provided the city council would grant an increase in fares. The council found itself powerless to do anything under the terms of the franchise; but after it was suggested that the matter be left to a vote of the people the council gave its consent. The local chamber of commerce and the federation of labor indorsed the six-cent fare, and during the ten days previous to the election made an open and vigorous campaign in its favor. The voters were informed that if the measure was defeated it would almost certainly mean unsatisfactory service and might even result in the abandonment of some lines. The railway took no part in advocating the increase. Some opposition developed to the proposed increase in fares, but the vote in the wards inhabited by those dependent almost entirely on the railway for transportation was "yes," while the "no" vote was cast in the wealthier wards. The Cedar Rapids & Marion City Railway is controlled by the United Light & Railways Company. It operates in all 27.5 miles of line, a considerable part of which is in Cedar Rapids.



## THE MUNICIPAL INDEX

In Which Are Listed and Classified by Subjects All Articles Treating of Municipal Topics Which Have Appeared During the Past Month in the Leading Periodicals.

It is our purpose to give in the second issue of each month a list of all articles or any length or importance which have appeared in all the American periodicals and the leading ones published in other countries, dealing more or less directly with municipal matters. The Index is kept up to date, and the month of literature covered each time will be brought up to within two or three days of publication. Our chief object in this is to keep our readers in touch with all the current literature on municipal matters. In furtherance of this we will furnish any of the articles listed in the index for the price named after each article, except that where an article is continued in two or three issues of the paper, the price given is for each of said issues. In addition to the titles where these are not sufficiently descriptive or where the article is of sufficient importance, a brief statement of its contents is added. The length also is given, and the name of the author when it is a contributed article.

### ROADS AND STREETS.

#### Concrete Pavements:

Wayne County's Concrete Roads. Report of county road commissioners on condition of concrete roads under enormous increase in traffic; changes in construction methods. 1,400 words. Municipal Journal, December 14. 10 cts.

Road Construction Methods in Wayne County, Mich. Salient points of practice developed during ten years of experience in building concrete pavements. 1 ill., 600 words. Good Roads, December 14. 10 cts.

Wider and Two-Course Roads in Wayne County. The commissioners of Wayne County, Mich., in their last annual report, tell of a number of changes made in the specifications for concrete roads. 400 words. Municipal Journal, December 7. 10 cts.

Reinforced Concrete Track for Testing Motor Trucks. Constructed for the primary purpose of trying out trucks manufactured for the Government; built by the Diamond T Motor Co. at its Chicago plant. 4 ill., 350 words. Engineering and Contracting, December 4. 15 cts.

Weston Road Concrete Pavement. It was decided to build 16 different types of pavement in order to judge as to which, if any, would be suitable for future work; traffic census given. 7 ill., 1,800 words. By E. A. James, chief engineer, Toronto and York Roads Commission. Canadian Engineer, December 26. 15 cts.

Development of Concrete Road Construction. Excerpts from one of the "J. E. Aldred lectures on engineering practice" at Johns Hopkins University. Manner in which new traffic conditions have affected the use of concrete as a road surfacing material. By A. N. Johnson, consulting engineer, Portland Cement Ass'n. 1,800 words. Canadian Engineer, December 5. 15 cts.

#### Asphalt Pavements:

Asphalt Pavement Construction in Rainy Weather. Interesting observations are given by T. G. Marriott, in a recent issue of "The Surveyor," on the laying of Trinidad asphalt macadam in Oxford, England, the contract providing for the continuous prosecution of the work during the winter weather. 1 chart, 1,000 words. Engineering and Contracting, December 4. 15 cts.

#### Block Pavements:

Construction Procedure in Repaving Lakewood, Ohio, with Granite and Wood Block. Five-inch granite block to be used on two miles and wood block on the remaining mile. 1 ill., 500 words. Municipal and County Engineering, December. 25 cts.

Blast Furnace Slag Used for Base and Cushion of Brick Pavement on National Highway. 13 1/4 mile section recently completed between New Concord and Zanesville, O.; rebuilt by order of the Government as a necessary war measure. 1 ill., 500 words. Engineering and Contracting, December 4. 15 cts.

#### Construction Methods:

Dynamiting a City Street. Removal of concrete in pavement in Warren, Pa., by use of dynamite with a minimum of labor and cost. From the DuPont Magazine. 300 words. Municipal Journal, December 14. 10 cts.

Machine for Removing Street Railway Tracks from Paved Streets. By means of a specially designed machine the Los Angeles Ry. Co. has been able to pull out 120 lineal feet of track per hour. 1 ill., 400 words. Engineering and Contracting, December 18. 15 cts.

Construction Methods Employed in Building Lincoln Highway Cut-Off Across the Desert at Gold Hill, Utah. Conditions very difficult; use of hay to

keep heavy equipment from bogging down; design of roadway. By R. E. Dillree, construction engineer, Utah State Road Commission. 12 ill., 2,700 words. Municipal and County Engineering, December. 25 cts.

Self-Feeding Bucket Loader Facilitates Handling Crushed Rock on Paving Job. Used by Ryan Brothers for paving North Broadway in Chicago. 1 ill., 400 words. Engineering and Contracting, December 4. 15 cts.

Day Labor, Force Account Work and Bonuses. Discussion of advantages and disadvantages of performing road work by day labor and by contract, with notes on the working of the bonus system. By Chas. M. Upham, chief engineer, Delaware State Highway Department. 2,500 words. Good Roads, December 21. 10 cts.

#### Road Planning:

Pavement Layouts Inadequate for Motor Traffic. Increasing the curb radius will do much toward relieving congestion. 3 ill., 900 words. Engineering and Contracting, December 4. 15 cts. By Wm. M. Kinney.

Necessity for the Proper Location of Roads. A list of things to note in locating a road. By a Dennis Williams, Assoc. M. Am. Soc. C. E. 900 words. Good Roads, December 14. 10 cts.

Superelevation of Highway Curves. Design of cross-section of pavements on curves and formula for safe speeds on curves of varying degrees. By R. A. Meeker, former state highway engineer of New Jersey. 4 ill., 1 table, 700 words. Good Roads, December 7. 10 cts.

Principles Controlling the Layout, Marking and Maintenance of Trunk Highways Systems. Detailed account of methods followed by Wisconsin recently in inaugurating a 5,000-mile system of state-maintained highways; patrol system, paid for by state, is administered by counties. Paper read before the Joint Highway Commission, by A. R. Hirst, state highway engineer of Wisconsin. 1 ill., 2,500 words. Engineering News-Record, December 19. 20 cts.

Relation of Highways to Motor Transport Efficiency. Rapidly developing demand for the creation of a system of inter-state highways to be constructed and maintained under the supervision and at the expense of the Federal Government; waste of funds attributable to having highway work in the hands of laymen. Address by Arthur H. Blanchard, president of the American Road Builders' Ass'n. 1,600 words. Engineering and Contracting, December 4. 15 cts.

Heavy Traffic Highways. Discussion of the construction of roads to accommodate increasing weight and of the limitation of truck weights and loads. From the annual report of the Department of Public Highways of the province of Ontario, Canada. 2,000 words. Good Roads, December 7. 10 cts.

Relation of Highways to Motor Transport Efficiency. Technically trained men should be employed to build roads, old practice should be modified and maintenance should be given attention. By Arthur H. Blanchard, president American Road Builders' Ass'n. 1,800 words. Good Roads, December 14. 10 cts.

#### Road Work:

Road Work of the Department of Agriculture. Extracts taken from the 1918 report of Secretary D. F. Houston and submitted to the President. 1,400 words. Good Roads, December 14. 10 cts.

Proposed Highway System for Minnesota. Description of the 6,000-mile system of main roads proposed by the State Highway Department, with a statement by Commissioner Babcock. 1 ill., 800 words. Good Roads, December 28. 10 cts.

Michigan Road Plans. Greater state control and bond issue likely to come before next legislature. 200 words. Good Roads, December 14. 10 cts.

#### Miscellaneous:

The Road: Its Paramount Importance as Viewed by a Briton. Great advance in road construction and maintenance methods; disintegration of old roads; making roads impervious to water. By J. H. A. McDonald, K.C.B., LL.D., writing in Chamber's Journal, London, England. 3,500 words. Municipal and County Engineering, December. 25 cts. 3,500 words. Pacific Municipalities, December. 30 cts.

The Aims of Engineers Engaged in Road Work. Necessity of having work done by skilled engineers. By Rodman Wiley, commissioner of public roads of Kentucky. 3,000 words. Municipal and County Engineering, December. 25 cts.

"Imaginative" and "Speculative" Highways for To-morrow. In planning, broad vision will be necessary; roads will be built much wider and stronger, and aesthetics as well as utility will affect design. By H. G. Shirley, secretary, Highway Industries Association, from paper read before the Joint Highway Congress, Chicago. 3,000 words. Engineering News-Record, December 26. 10 cts.

Why Federal Government Should Vastly Increase Its Appropriation for State Aid in Road Building. Social and industrial need of a great system of hard roads in America. Reduction in cost of transportation only one of the economic ends attained by building hard roads. 1,300 words. Engineering and Contracting, December 4. 15 cts.

Highway Improvement and Land Reclamation as Means for Providing for Returned Soldiers. Good roads saved Paris; reclaim the arid lands and drain the wet lands. Abstracts from an address by Franklin K. Lane, Secretary of the Interior. 1,400 words. Engineering and Contracting, December 4. 15 cts.

Road Work Now and in 1919. Editorial comment on two statements issued by Federal officials showing the importance attached to highways and highway traffic by some branches of the Federal Government; the snow removal problem. 750 words. Municipal Journal, December 7. 10 cts.

Representative Highway Congress in Chicago Unit for National System. Interstate motor-truck transportation here to stay; enlarged Federal-aid appropriations approved. 3,000 words. Engineering News-Record, December 19. 20 cts.

State Highway Officials and Highway Industries Associations to Meet at Chicago, Ill. Historical and descriptive sketches of the American Association of State Highway Officials and the Highway Industries Association; personnel of the officers and committees; program of the Chicago convention. 9 ill., 4,000 words. Good Roads, December 7. 10 cts.

President and Cabinet Officers Favor Additional Federal Road Expenditures. Wilson, Houston and Baker advocate highway work to develop transportation and provide employment. 400 words. Good Roads, December 7. 10 cts.

Waterproof Floors for Railway Crossings Over Streets. Grade-crossing work makes severe demands; trouncing unsatisfactory; concrete slab floor; various methods of sealing concrete to girders. By H. T. Welty, engineer of structures. N. Y. C. R. R., New York. 9 ill., 3,500 words. Engineering News-Record, December 12. 20 cts.

Damage Suits from Street Defects. Sufficiency of notice, in bringing action for injury, as to location of defects in street by which injury was caused; court decisions in the various states. By John

Simpson. 2,300 words. Municipal Journal, December 14. 10 cts.

Corrugated Pipe for Road Drainage. Well adapted to meet the rough-and-ready conditions of county highways; withstands strains from freezing and thawing soil. 4 ills., 700 words. Engineering and Cement World, December 1. 15 cts.

Experience of various Counties in Utilizing Local Deposits on County Construction Projects. Rising prices and shipment difficulties have compelled county engineers to give more attention to obtaining materials from local deposits. 8 ills., 2,200 words. Municipal and County Engineering, December. 25 cts.

Hauling Heavy Girders Through the City Streets. A letter of protest to the editor from Herbert W. Alrich, N. Y. C. 1,200 words. Engineering News-Record, December 5. 20 cts.

## SEWERAGE AND SANITATION

### Sewers:

Frankford Creek Intercepting Sewer. Some unusual features of work in Philadelphia; grit chamber; overflow chamber; pressure conduit; sewer laid on surface. 4 ills., 2,200 words. Municipal Journal, December 14. 10 cts.

Riverside Drive Sewer, Cleveland. A \$90,000 main sewer now being constructed on a beautiful drive in Lakewood, a suburb of Cleveland. 1 ill., 350 words. Canadian Engineer, December 5. 15 cts.

Some Sewer Construction Details. Small pumping stations; laying a sewer above street grade; excavating and laying sewer in deep trench in sand and water. 2 ills., 1,500 words. Municipal Journal, December 28. 10 cts.

### Sewage Treatment:

Promising Results with Miles Acid Process of Sewage Treatment in New Haven Tests. Good removal of suspended and settleable solids and bacteria; effluent and sludge stable; grease utilization problems; local conditions favor process at New Haven. 2,800 words. Engineering News-Record, December 5. 20 cts.

Chicago Faces Sewage Disposal Problem. Federal Government may restrict the flow from Lake Michigan, in which case the state government would be justified in requiring the construction of works for treatment of sewage. By C. D. Hill, engineer of the Board of Local Improvement. Engineering News-Record, December 19. 20 cts.

Sewage Disposal from an Operator's Standpoint. Problem of sewage disposal becoming more important as the smaller towns and villages increase, and the pollution of the rivers and streams must be minimized. Abstracted from "Western Municipal News," by Wm. K. F. Durrant, Moose Jaw. 2,000 words. Canadian Engineer, December 12. 15 cts.

Cleaning Septic Tank at Camp Lee. Use of the Ottoson Auto-Eductor at the camp. Test made shows that it will handle satisfactorily the type of material usually found in grit chambers. 1 ill., 1,000 words. Municipal Journal, December 28. 10 cts.

### Stream Pollution:

Control of Stream Pollution. Use of streams for waste disposal; effect of stream pollution; temperature, depth and velocity; self-purification of streams; summary of present status and remedy. By Prof. Earle B. Phelps, American Public Health Service, Washington, D. C. 4,300 words. Canadian Engineer, December 12. 15 cts.

Dissolved Oxygen as an Index of Pollution. Results of tests show a surprising and persistent decline in the degree of saturation in all parts of the New York harbor and lower East Rivers. Paper read before the American Public Health Ass'n. By Kenneth Allen, engineer of sewage disposal, N. Y. C. 3 tables, 800 words. Canadian Engineer, December 19. 15 cts.

### Sanitation:

Public Health and Private Precaution. Editorial on the duty of city, state and country to establish a more perfect public health. 1,500 words. Municipal Journal, December 14. 10 cts.

Public Health Requires Engineering Service. Convention considers medical, technical and administrative problems of sanitation and industrial housing. 1,000 words. Engineering News-Record, December 19. 20 cts.

State Board of Health Reform. Abstract of paper read before the New Jersey Sanitary Association, pointing out the deficiencies of the New Jersey State Department of Health and the vital need

of reform. By M. N. Baker, lately member of the New Jersey State Board of Health and associate editor of Engineering News-Record. 600 words. Municipal Journal, December 21. 10 cts.

Public Health Nursing in Manitoba. Illustrated by visits to municipalities of Rockwood and Assiniboia; series of public meetings throughout the various school districts to arouse interest in this important activity of health education. 5,000 words. Western Municipal News, December. 15 cts.

The Influenza-Pneumonia Pandemic in United States Army Camps. Over 1 in 5 had influenza and 1 in 30 had pneumonia; combined death rate exceeded 14 per 1,000. By Maj. George A. Soper, Sanitary Corps, U. S. A. 3 tables, 700 words. Engineering News-Record, December 26. 20 cts.

The Sanitary Inspector. His Duties, Qualifications, and a Few of his Difficulties. By H. G. Buck, Royal Sanitary Institute, Saskatoon, Sask. 2,500 words. Western Municipal News, December. 15 cts.

Extra-Cantonment Zone Sanitation. Control of communicable diseases; free inoculation and vaccination; milk inspection; restaurants; barber shops; publicity; financial. (Concluded from page 425.) By W. A. Hardenbergh, assistant sanitary engineer, U. S. Public Health Service. 2 ills., 2,800 words. Municipal Journal, December 7. 10 cts.

### Miscellaneous:

Relation of Main Drainage to River and Harbor Front Improvement in Various Cities. Improvement of water front largely dependent upon improvement of sewerage system. By Morris Knowles and John M. Rice, engineers, Pittsburgh, Pa. 2,300 words. Municipal and County Engineering, December. 25 cts.

South Haven Waterworks and Sewers. Cost of pumping water during 1917-1918, and cost of sewer construction. 500 words. Municipal Journal, December 28. 10 cts.

Design and Operation of Automatic Sewage Pumping Station at West Haven, Conn. Cost of electric current. By Clyde Potts, civil and sanitary engineer, N. Y. C. 2 ills., 1,200 words. Municipal and County Engineering, December. 25 cts.

## WATER SUPPLY

### Water Works Operation:

Waterworks Operation. Thawing mains, services and fire hydrants by electricity; methods and appliances used; comparative popularity of different methods. 1 ill., 2,600 words. Municipal Journal, December 7. 10 cts.

Waterworks Operation: Maintenance of Reservoirs. Features of maintenance of small reservoirs and of large impounding reservoirs; sodding and other treatment of embankments. 2,400 words. Municipal Journal, December 28. 10 cts.

St. Louis Waterworks Operation. Interesting features of last year's work of the department; removing sand from an intake tunnel; ice trouble at intakes; reconstructing Compton Hill reservoir; organisms in reservoirs; sterilizing conduits. 2 ills., 2,500 words. Municipal Journal, December 21. 10 cts.

Protecting Water Mains, Fire Hydrants and Valves Against Freezing in Winnipeg, Manitoba. By Thos. H. Hooper, operating superintendent of waterworks, Winnipeg. 800 words. Municipal and County Engineering, December. 25 cts.

Lead Pipe Couplings. Discussion of joints used in service pipe connections. By J. A. Jensen. 1,800 words. Journal of American Waterworks Association, December. \$1.10.

How to Prevent Freezing of Riser Pipes to Elevated Water Supply Tanks. Preventive measures recommended by "The Water Tower," the organ of the Chicago Bridge and Iron Works. 1,100 words. Municipal and County Engineering, December. 25 cts.

### Water Meters:

Water Meters Should be Selected with More Care. Loss of head varies greatly with different makes; right choice saves money; plumbing adjustments help. 3 ills., 1,100 words. Engineering News-Record, December 12. 20 cts.

Selection of Water Meters. Adapting meter to special requirements of each service may permit economy in the purchase of meters; appliance for measuring rates of flow in individual services; loss of head. By Caleb Mills Saville, manager and chief engineer of the Water Department, Hartford, Conn., from a paper read before the New England Waterworks Ass'n. 5 ills., 2 tables, 3,700

words. Municipal Journal, December 7. 10 cts.

Buffalo Water-Waste Survey Saves Water, Coal and Labor. Pitometer, house-to-house inspection and fixture repairs, produce remarkable results, with city only half covered. By Geo. C. Andrews, water commissioner, Buffalo, N. Y. 1,500 words. Engineering News-Record, December 5. 20 cts.

### Pumping:

High Efficiency Shown by Motor-Driven Waterworks Pumps at St. Paul, Minn. Manufactured by the De Laval Steam Turbine Co., of Trenton, N. J. 2 ills., 1,500 words. Municipal and County Engineering, December. 25 cts.

Buckwheat for Waterworks Boilers. Philadelphia had installed twenty coke stokers, utilizing the smaller sizes of anthracite coal. By Carleton E. Davis, chief of bureau of water, Philadelphia. 500 words. Canadian Engineer, December 26. 15 cts.

### Purification:

Chicago Introduces New Chlorinator. The new Mayfair station has five triple-expansion plunger engines with a combined daily capacity of 110,000,000 gallons; chlorine solution applied by pipes extending 55 feet below the upper tunnels which lead to the pumps. By John Ericson, city engineer, Chicago. 2 ills., 1,500 words. Engineering News-Record, December 19. 20 cts.

Significance of Black Sands in Filters. Dark color of sands in many plants in Kansas due to manganese and iron. By J. E. Welker and C. C. Young, from paper read before the American Waterworks Ass'n. 1 table, 1,500 words. Canadian Engineer, December 26. 15 cts.

Water Treatment at Council Grove, Kansas. Results secured under peculiar difficulties after three years of operation of the waterworks station at Council Grove. By Louis L. Tribus. 4 ills., 1 table, 2,400 words. Canadian Engineer, December 19. 15 cts.

St. Louis Water Purification Plant. Amounts and prices of chemicals used; methods and results of operation; cleaning filter sand; the strainer system; entrained air; effects of chemicals on apparatus; itemized cost of operating plant. 3,800 words. Municipal Journal, December 28. 10 cts.

Water Filtration at Minneapolis. The filtration plant consists of a 7.5-million-gallons sedimentation basin, 4 coagulation basins, 16 filter beds, and a 45-million-gallon covered clear-water reservoir. 400 words. Municipal Journal, December 28. 10 cts.

### Miscellaneous:

National Control of Watersheds. Discussion by an English waterworks engineer of the advantages of such control and some of the problems connected therewith. Paper before the Municipal Waterworks Association at Birmingham, England, by Charles G. Hengell, waterworks engineer at Leeds, England. 1,500 words. Municipal Journal, December 7. 10 cts.

Investigations of Pipe Corrosion in Chicago Buildings, with Special Reference to Durability of Pipe Materials. Method of investigation; chemical test of pipe; design of drainage system in Chicago; all corrosion internal; proportioning pipes to suit number and size of fixtures. By Thos. J. Claffy, ass't chief sanitary inspector, department of health, Chicago, Ill. 3,200 words. Municipal and County Engineering, December. 25 cts.

The Reconstruction of a Municipal Water and Light Department. The experience of Columbia City, Ind. By Frank T. Schultz, supt., Columbia City Light and Waterworks Dept. 3 ills., 2,500 words. American City, December. 35 cts.

Trend of Wages Paid by American Waterworks. Interesting studies of the increase in cost of labor were recently reported in the Journal of the American Waterworks Association, September, 1918. Conditions in 50 plants. Outlook for reduced cost in operation not encouraging. By Leonard Metcalf, of Wetcalf & Eddy, consulting engineers, Boston. 1,700 words. Municipal and County Engineering, December. 25 cts.

Commission Control Does Not Remove Hazard of Utility Investment. Ruling in Indianapolis water-rate case makes company share war risk and modifies former commission's position. By Leonard Metcalf, consulting engineer, Boston. 2,500 words. Engineering News-Record, December 19. 20 cts.

(To be concluded next week)



## NEWS OF THE SOCIETIES

**Feb. 18-21, 1919.—AMERICAN ROAD BUILDERS' ASSOCIATION.** Sixteenth annual convention and Ninth American Good Roads Congress under the auspices of the A. R. B. A., Hotel McAlpin, New York, N. Y. Secretary, E. L. Powers, 150 Nassau street, New York, N. Y.

**Nov. 12-14, 1919.—AMERICAN SOCIETY FOR MUNICIPAL IMPROVEMENTS.** Annual convention, New Orleans, La. Secretary, Charles C. Brown, Bloomington, Ill.

### American Public Health Association.

While the influenza epidemic was necessarily the principal subject for discussion at the recent forty-sixth annual meeting of the American Public Health Association, held in Chicago, little of definite help was decided upon. Disagreement among the experts on many vital points marked the conferences.

Ninety per cent. of the deaths from influenza and pneumonia are preventable when a properly prepared vaccine is used, according to an address by Dr. E. C. Rosenow of Rochester, Minn.

Dr. Rosenow read figures on the results of inoculations around Rochester, showing that after the third inoculation there were nine cases of influenza per 1,000 against 220 per 1,000 among the uninoculated and one and eight-tenth cases per 1,000 of pneumonia against fourteen per 1,000 among those not inoculated. More than 20,000 persons were given the three inoculations and their cases were compared with 61,000 not given the treatment. The deaths from influenza and pneumonia among those inoculated were one-tenth those among the uninoculated, Dr. Rosenow showed.

Surgeon-General Blue, head of the United States Public Health Service, said that nearly 350,000 death occurred among civilians from September 1, 1918, to December 1, 1918, from influenza and pneumonia. He had no figures on the epidemic in the army camps.

Surgeon-General Blue came to arouse the health officials attending the meeting to a realization of the problem confronting communities when the armies are demobilized.

"The conditions after the war with demobilization of troops and resumption of immigration from areas in which sanitation has been necessarily neglected constitute a situation of far greater menace to the health of the nation than has previously existed," he said. "Public health officials must be prepared for increased demands from the soldiers themselves, for they have seen certain measures of hygiene and sanitation insisted on as indispensable to good health. The proportion of rejections by draft boards because of physical defects affords eloquent testimony to our physical shortcomings. The health administration program must include health supervision of school children and children of pre-school age."

Dr. Woods Hutchinson of New York

said that gauze masks and vaccine were about the only successful methods of fighting influenza. He declared that quarantines and the closing of all public meeting places were "a relic of barbarism," with no value whatever. "With every one wearing masks in San Francisco," said Dr. Hutchinson, "the number of cases of influenza was brought from 2,300 a day down to 300 a day within six days, and business went ahead as usual. They vaccinated 81,000 there, with almost no deaths among those thus immunized."

The mask also served to control epidemics of whooping cough and chicken pox in San Francisco, Dr. Hutchinson said, and should prevent epidemics of other diseases like scarlet fever, where the germs are carried in the nose and throat.

Dr. Hutchinson said that doctors in hospitals protected themselves by masks, but would not insist on them for civilians.

Dr. Hutchinson said the influenza epidemic which many health officers believed came from the battle fronts in Europe was returning there now.

Health commissioner E. H. Bullard of Kansas City summarized the aim of most of the delegates by saying:

"We came here to find the means of prevention and cure, and the public expects it of us. We still have the influenza with us, and our experiences have not yet shown us the successful way to combat the disease. We have closed up twice, and once the cases increased and once the number declined, each time probably due to the spread or decline of the epidemic itself rather than our quarantine action. But we must take back to our communities some reasonably definite results."

"The various communities for which we are working will know that we have at hand the best available information science has yet discovered concerning the disease," said Dr. Charles J. Hastings of Toronto, Can., retiring president. "We cannot expect to draw up a definite program for combatting influenza epidemics when we see so wide a divergence of opinion among medical authorities as has been shown here."

Health officers from the Southeast, especially Dr. S. W. Welch of Montgomery, Ala., favored strict quarantine measures, and those from smaller cities were moderately favorable to quarantines and the use of masks; while health officers of the larger cities opposed both these measures and placed great reliance on vaccine.

"After all it is a question of applying to your own community the most practical remedies for the conditions encountered there," said Dr. Welch.

Health commissioner Dr. J. W. Inches of Detroit led the argument against closing public meetings, schools, theatres and stores, though he said his state compelled him to adopt some

restrictive measures. He ridiculed the use of the mask as not a feasible measure in the largest cities.

On the other hand, Dr. J. A. Hayne of Charleston, S. C.; Dr. M. J. Flannigan of Richmond, Va.; Dr. W. R. Stokes of Baltimore, and Dr. W. E. Moore of Sioux Falls, S. D., held that closing public meetings in rural districts was efficacious.

Professor C. E. A. Winslow of Yale, professor of public health, offered a solution of the difficulty in resolutions favoring a dual system to keep things open in large cities, where inspection was easier, and to close public meetings and schools in rural communities, where such measures would keep people more in the open air.

Dr. W. H. Park, of the Committee on Vaccines, said in his report that the disease was due to an "undetermined organism," and the dominating variety of the organism differed according to various localities. His report condemned the indiscriminate use of "stock vaccine," and held that the vaccine should be used only in controlled cases until its efficacy could be established. He admitted that the most generally used form of vaccine offered some protection against the secondary or more serious stages of influenza, but little against the mild form of the disease, and added that the vaccine generally had not been used until the peak of the disease, thus proving little.

Frederick L. Hoffman of Newark, reporting for the Committee on Vital Statistics, said nearly 400,000 had died in this country the last three months, and they were chiefly men between twenty and forty years old.

Dr. W. C. Woodward, reporting for the Committee on Relief Measures, outlined a program for organization of hospital facilities, doctors, nurses and other public health agencies to be prepared for a severe recurrence of the epidemic.

Four committees of the association were chosen to organize the work of teaching cities and communities to prevent or control outbreaks of influenza. One committee will compile statistics on the recent influenza epidemic; another will devise and circulate the best known measures of prevention; another will handle measures of relief for convalescents, and the fourth will investigate vaccines and serum. The chief effort of the annual meeting was to organize the coming year's work along the lines of these four committees, according to Dr. Lee K. Frankel of New York, treasurer of the association. "These committees are to act in the interest of public health boards and officials all over the country and standardize, if possible, the means of preventing another such epidemic as the one now passing."

In discussing "Democracy and Public Health," Dr. Charles J. Hastings of Toronto, Can., in his presidential address at the opening session, pleaded for better care for the child and "to give our boys the democracy they have

(Continued on page 60)



## INDUSTRIAL NEWS

**Iron and Steel Conditions.**—There is little evidence that the demand for steel products will experience a revival in the near future. A common view is that the capacity operation for the steel industry is at least six months away. There has been practically no new buying, and specifications against old contracts have been very light. The steel that is being produced is all of more or less special character. The steel producers intend to hold existing prices as long as they can. That may not be a difficult task for a time, as there is practically no temptation by way of buying demand to cut prices.

Production of pig iron and steel in December proved decidedly heavier than was expected, the month not showing the slowing down in operation that must necessarily follow the sudden ending of the war. The real slowing down is therefore to come during the next few weeks, and may be accentuated by the fact that production was continued through the old year at such a heavy rate.

Already the steel mills are operating at a much lower rate than in December, some estimates placing the rate as low as 65 per cent. of capacity. This would be a rate of 32,000,000 tons a year in steel ingots compared with actual production in 1918 of 42,000,000 tons and in 1906 of 22,000,600 tons. The enormous steel making capacity now in existence is thus recognized, for in 1906 there was an extremely heavy demand from all quarters, and the existing capacity was pushed to its utmost throughout the year, while a 65 per cent. operation of present capacity means 40 per cent. more tonnage than was made in 1906.

If adoption of the new form of finished steel sales contract becomes general, as is confidently predicted in some quarters in the trade will be the case, the steel trade's method of doing business will be revolutionized. Hitherto contracts for finished steel, except such steel as was definitely ordered for some particular job of construction, have amounted practically to options, the buyer specifying or giving actual shipping orders if it suited him, otherwise ignoring the contract. When the market advanced the buyer would specify in full, and as the mills commonly oversold in order to make sure of operating they would then fall behind in deliveries. When the market declined the buyer would expect adjustment of price. That is what has just occurred, as a matter of fact, as shipments against existing contracts are now being commonly made at the reduced prices that became effective last month. The new contract provides "liquidated damages" if the buyer fails to specify, on the one hand, or if the mill fails to ship on time, on the other hand. Faced with

the necessity of making such a payment both buyer and seller would be much more conservative in making contracts if the proposed form were used. The buyer would purchase only the material he was certain he could use, and the mill would sell only the tonnage it was certain to be able to deliver on time. "Unfilled tonnages" reported would be much smaller than in the past, but they would be "unfilled orders" rather than "unfilled obligations." When the market became weak the mills would not find themselves without shipping orders when they had millions of tons of pseudo business on books.

### Exporting Asphalt Paving Equipment.

The market in foreign countries for American equipment used in asphalt pavement construction appears to be developing rapidly. **The F. D. Cummer & Son Co.**, Cleveland, O., is receiving many inquiries from South America, and has recently shipped asphalt plants to Ecuador and Cuba. While the company has a fair amount of stock on hand and will be able to make prompt shipments of a limited number of plants in early spring, new conditions indicate that orders should be placed promptly if disappointment is to be avoided.

### Commerce Department Talks Over War Industries Board Activities.

The functions which have hitherto been exercised by the Conservation Division and the War Prison Labor and Waste Reclamation Service of the Labor Division of the War Industries Board will be continued by the Department of Commerce which has established for that purpose the Industrial Cooperation Service and the Waste Reclamation Service, both of which will be temporarily installed in their present quarters in the building of the Council of National Defense. The work of the new services will be voluntary so far as the industries are concerned without any element of compulsion, depending on consent to methods approved by common counsel and trade experience. In connection with the Industrial Cooperation Service, the following-named gentlemen, most of whom were heads of divisions of the War Industries Board, have consented to serve as unofficial commercial advisers of the Secretary of Commerce:

Samuel P. Bush—Forgings.  
W. B. Dickson—Steel.  
Thomas E. Donnelley—Pulp and paper.  
Charles H. MacDowell—Chemicals.  
Edwin B. Parker—Former priorities commissioner, War Industries Board.  
Thomas C. Powell—Railroad transportation.  
William M. Ritter—Lumber.  
Walter Robbins—Electricity.  
A. W. Shaw—Former chairman, Conservation Division, War Industries Board.  
Pope Yeatman—Nonferrous metals.

Other gentlemen have been invited to serve and replies from them are awaited. In connected with the Industrial Cooperation Service Mr. A. W. Shaw, chairman of the Conservation

Division of the War Industries Board, has kindly consented to give his assistance in supervising the transfer of the work and in starting it upon its new basis. Mr. Hugh Frayne, chairman of the Labor Division, War Industries Board, and a former member of that board, has been similarly courteous in connection with the work of the Waste Reclamation Service.

It is the purpose of the Department of Commerce through both of these important services to keep in close touch with the industries and under its organic law, which calls upon it to foster, promote, and develop the industries of the country, to assist them in every practicable way. The services now created from the activities of the War Industries Board will permit greatly enlarged usefulness to the commerce of the country. The Bureau of Foreign and Domestic Commerce has long actively promoted the interests of our commerce abroad; the Bureau of Standards is affording, with greatly extended facilities created during the war, that scientific support to all industries which has been the basis upon which Germany so successfully built her commerce before the war. The Industrial Cooperation Service dealing with problems of commercial standardization, of the saving of industrial wastes, of greater effectiveness in production and sale, in the removal of hurtful and uneconomical trade practices, will substantially complete the cycle of helpfulness and with the Waste Reclamation Service will form a rounded whole of aid to commerce especially needed in the present days of readjustment and in the future days of competition to follow.

### Truck Contracts Cancelled.

It has been officially announced that orders for from 25,000 to 28,000 motor trucks of the "B" type have been canceled. These were distributed among twenty-one concerns. Production on the orders had not started.

**The Garford Motor Truck Company**, Lima, O., announces that S. M. Williams, president of the Highway Industries Association, and for the past four years sales manager of the company, has been relieved of his duties as sales manager to take charge of the new department of highway development which has been established by the company.

**The Wheeler Condenser & Engineering Company**, Carteret, N. J., announces that it has obtained from the Schutte & Koerting Company, of Philadelphia, through the Alien Property Custodian, the exclusive right to manufacture and sell steam jet air pumps under patent No. 968,926 in connection with surface condensers, jet condensers, barometric condensers, vacuum pans and evaporating apparatus.

This patent covers the valuable fea-

ture of two or more steam jets working in series with a condenser between the jets—a feature claimed to enable this type of pump to perform a given duty much more efficiently than any steam jet not so equipped.

Literature and test data may be obtained from the manufacturers.

**The American-La France Fire Engine Company, Inc.,** Elmira, N. Y., announces the receipt of the following orders:

Buffalo, N. Y., 1 type 40 pumping engine; Hackensack, N. J., 1 type 31, 65-ft. aerial truck; New York, N. Y., 5 special pumping engines; U. S. Government, Naval Training Camp, Codrington Point, R. I., 1 40 combination; Engineering Depot, 1 75 chassis; Fairport, N. Y., 1 type B combination chem. eng. and hose car.

## NEWS OF THE SOCIETIES

(Continued from page 58)

been fighting for" by wage conditions and health measures which will conserve the "manpower which now is recognized as the nation's greatest asset."

General education in sanitary matters as a means of preventing disease and promoting both public health and physical fitness was the keynote of the address. Public recognition of the health officer was discussed by Dr. Lee K. Frankel, New York. He presented statistics showing that of 417 cities 153 had full-time officers and 264 part-time officers, most of the former being in cities under 50,000. In the majority of cases no training in taking care of the public health is required of candidates for office.

Besides the six general sessions there were about twenty-five others held by the seven sections of the convention. Sanitary engineering questions, as well as bacteriological, were taken up.

Chlorination of the water supply of Chicago was described by John Ericson, city engineer, and in the discussion it was pointed out that one element of the success of this treatment is variation of the dosage in accordance with wind and weather conditions on the lake, as these conditions are found to influence directly the bacterial content of the water. While Chicago already has the remarkably low typhoid death rate of 1.7 per 100,000, it is expected that the figure for 1918 will be below 1.5.

Conditions at Milwaukee in regard to quality of the lake water were described by T. Chalkley Hatton. Treatment of Chicago sewage by dilution in the drainage canal was indorsed by C. D. Hill, engineer of the Board of Local Improvements, and Langdon Pearse outlined the experiments on preliminary treatment of sewage before its discharge into the channel.

Sanitary work at the shipbuilding yards was reviewed in a paper by Lieutenant-Colonel Philip S. Doane, director of health and sanitation for the United States Shipping Board. In the eleven yards operated by the board it was not difficult to carry out sanitary measures, but the other 160 yards work under contracts, none of which calls for specific sanitary equipment, and only a few of which provide for maintenance of sanitary and hygiene conditions. Thus the health department had to work diplomatically and in an advisory capacity, but in most cases the yards carried out the suggestions made. Interconnection of dual water systems for fire protection and drinking supply, with only a single gate valve for the protection of the latter, was a common trouble that has been almost entirely eliminated. Water supply, sewage disposal, food protection, toilets, fly and mosquito conditions were the principal centers of activity. Closely related to this subject was the mosquito control at Hog Island, described by B. F. Royer, acting state commissioner of health for Pennsylvania.

Housing work of the United States Shipping Board was described by Morris Knowles, chief engineer of the housing department of the board, who showed plans of various layouts and also photographs illustrating the types of structures employed. In the discussion the great extent and importance of the housing work carried on by different departments of the United States Government were mentioned by C. B. Ball, chief sanitary inspector, Chicago.

Recovery of grease and tankage from garbage has fallen off slightly under war conditions in spite of the educational work of the Food Administration. This was shown in a report prepared by Samuel A. Greeley, Chicago. Prices have increased from about five cents to fifteen cents per pound for grease and from \$7 to \$18 per ton for tankage.

"A Critical Study of the Bacterial Count in Water and Sewage," dealing with the probabilities of errors, was presented by Milton F. Stein, designing engineer, Division of Sanitary Engineering, Cleveland.

### Indiana Engineering Society.

The thirty-ninth convention of the Indiana Engineering Society will be held at the Claypool Hotel, Indianapolis, January 23-25.

The opening session, on Thursday afternoon, January 23, will be marked by a number of important papers on highway engineering subjects. Following officers' and committees' reports John W. Mueller, consulting engineer, Richmond, Ind., will present the report of the Committee on Legislation, of which he is chairman. This report will cover proposed state road legis-

lation, as well as the proposed civil service law governing city and county offices.

The papers to be presented at this session are: "Proposed Bills for County Surveyors," with discussion led by J. R. Gregory, county surveyor, Williamsport, and R. E. Gibbons, Terre Haute, Ind.; "The Concrete Road and Its Mission," C. D. Franks, Indianapolis, engineer, Portland Cement Association; "Roads and Highways"—two papers by prominent speakers; "Highway Engineering Work," Professor R. C. Yoeman, associate professor of highway engineering, Purdue University; "The Rational Method of Computing Storm Run-Off," Professor K. P. Wiley, Purdue University, Lafayette, Ind.

Thursday night's session will be devoted to the economic welfare of the engineer, and will be held jointly with the American Association of Engineers, Professor R. C. Yoeman presiding. The following papers will be read: "The Engineer, His Problems and Opportunities," W. H. Finley, President A. A. E., President of N.-W. Railway Company, Chicago, Ill.; "The Need of Co-operation Among Engineers," W. C. Drayer, Secretary A. A. E., Chicago, Ill.; "Proposed Bill for Licensing Structural Engineers"; discussion led by H. O. Garman and W. H. Insley, Indianapolis.

Friday and Saturday sessions will be held in connection with the local section of the national mechanical, civil and electrical engineering societies. The papers to be read include the following: "Psychological Methods of Selection for Soldiers, Officers and Employees," Professor C. F. Harding, Purdue University; "Developments of the Governing Policies for Engineering Societies"; joint discussion with A. S. M. E. Section; discussion led by Professor Talbot, Urbana, Ill.; "The Year's Progress in Electrical Engineering in the Allied Fields"; report by Professor D. D. Ewing, Purdue University; "Electrical Pumps in Municipal Water Works," Professor D. D. Ewing, Purdue University; "Steam Plants in Indiana in Relation to Fuel Conservation," Professor Frank C. Wagner, Rose Polytechnic Institute, Terre Haute, Ind., administration engineer U. S. Fuel Administration of Indiana; discussion by George W. Hubley, administration engineer U. S. Fuel Administration, State of Kentucky; "The Fuel Administration and Public Utilities," Charles Brossman, Indianapolis, Ind., consulting engineer on public utility plants, U. S. Fuel Administration of Indiana; "Public Utilities in the War Period," H. O. Garman, chief engineer, Indiana Public Service Commission, Indianapolis; "Sanitation in National Army Camps," Samuel E. Greeley, sanitary engineer, Chicago, Ill.

The secretary of the society is Charles Brossman, 1503 Merchants' Bank Building, Indianapolis, Ind.

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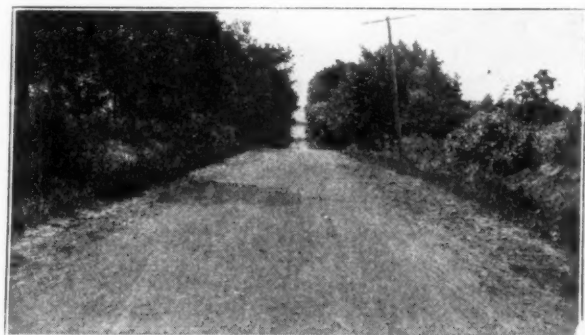
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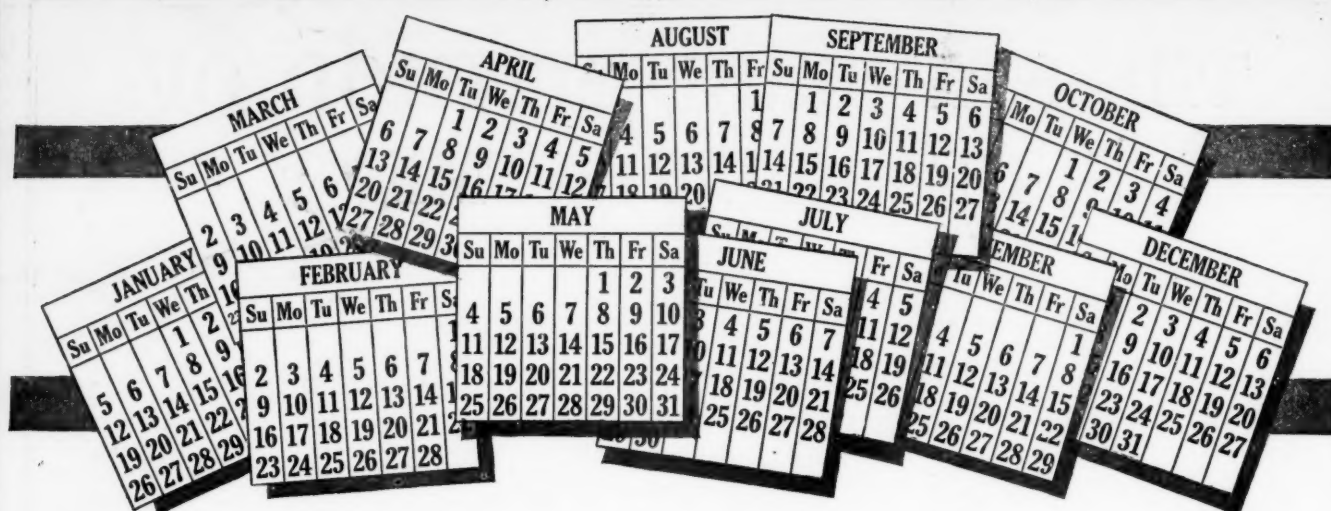
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